U.S. Department of the Interior
Bureau of Land Management
Kemmerer Field Office, Wyoming

November 2003

Kemmerer Field Office Planning Area

Summary of the Management Situation Analysis

How To Use This Document

The Summary of the Management Situation Analysis (MSA) for the Bureau of Land Management (BLM) Kemmerer Field Office Resource Management Plan (RMP) revision is intended to be a reader-friendly document that provides an introduction to the RMP revision topics. The organization of the summary is shown below.

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It is the mission of the Bureau of Land Management to sustain the health, diversity, and productivity of the public lands for the use and enjoyment of present and future generations.

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CHAPTER 1.0 WHERE DO WE BEGIN?

This document summarizes the Management Situation Analysis (MSA) for the Kemmerer Field Office Planning Area (Kemmerer Planning Area). The MSA is a comprehensive assessment of the various resources on public lands within the planning area.

The Summary of the MSA is designed to be a reader-friendly document describing the current management situation in the Department of the Interior, Bureau of Land Management (BLM) Kemmerer, Wyoming Field Office Planning Area. Figure 1 depicts the Kemmerer Planning Area.

This chapter provides:

- A brief introduction to this summary;
- An overview of the current RMP and discussion of the RMP revision process;
- Information on why the BLM conducted the MSA; and
- Collaborative planning details.

1.1 Introduction

As part of the Resource Management Plan (RMP) revision process, the Kemmerer Field Office conducted a management situation analysis for the Kemmerer Planning Area. The MSA provides baseline information for the RMP revision and associated Environmental Impact Statement (EIS).

This summary is intended to be reader-friendly and presents an overview of the MSA. This document compiles, in one location, important information about existing resource conditions, current management practices, issues and concerns, and management opportunities identified to date. This information is summarized in this document for each resource and represents baseline conditions.

Based on the description of baseline conditions, this document also identifies some of the issues and management concerns for resources and uses in the planning area. Primary issues for each section are listed. Some issues are relevant to many resources, but are listed only in the primary resource area discussion. These relationships will be explored during the RMP revision process.

The issues and management concerns identified in this document are neither exhaustive or final. Instead, they are intended to generate discussion and input to BLM for use in the RMP Revision process. During the scoping, it is hoped that the public will identify additional issues and management concerns for the BLM to consider.

The discussion of baseline conditions, current management practices, and issues and management concerns in Chapter 2.0 of this document leads to identification of management opportunities for each resource. BLM has identified some of the management opportunities for resources and uses in this document; however, the bulleted lists of opportunities presented in Chapter 2.0 are neither exhaustive or final. The scoping process is an

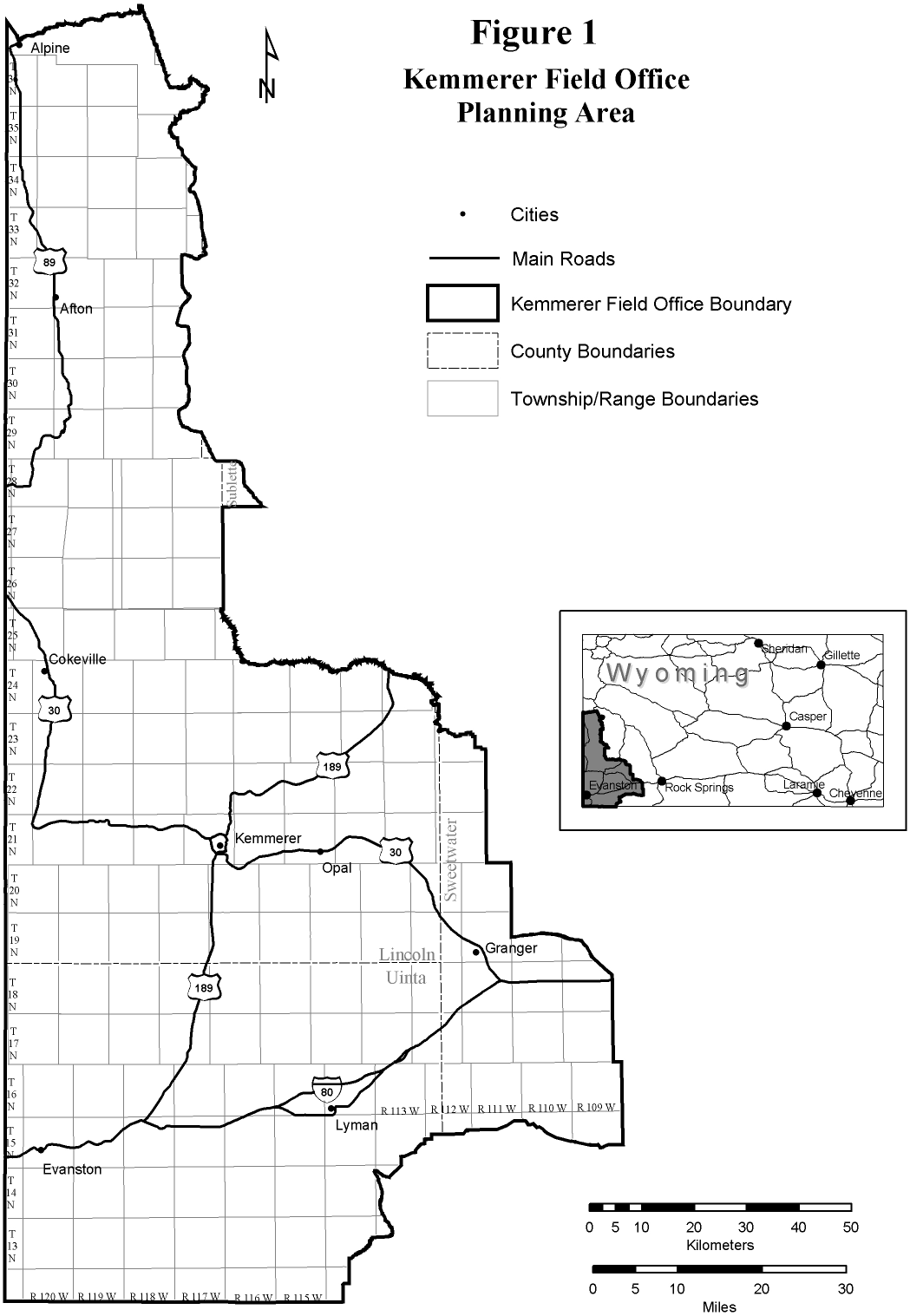


Figure 1
Kemmerer Field Office
Planning Area
Cities
Main Roads
Kemmerer Field Office Boundary
County Boundaries
Township/Range Boundaries
Alpine
Afton
Cokeville
Kemmerer
Opal
Granger
Lyman
Evanston
Sublette
Sweetwater
Lincoln
Uinta
89
30
189
80
Wyoming
Sheridan
Gillette
Casper
Evanston
Rock Springs
Laramie
Cheyenne
0 5 10 20 30 40 50
Kilometers
0 5 10 20 30
Miles

excellent opportunity for the public to let BLM know what other management opportunities exist for resources on BLM land.

A list of preliminary planning issues and criteria have been identified and will be used to guide the formulation of alternatives (Appendix A). These preliminary planning issues and criteria are not final. They may be added to or refined during the scoping process. The BLM is requesting your help in identifying additional issues and concerns, management alternatives, or other ideas to be considered in the planning effort.

Appendix B provides a list of plant and wildlife scientific and common species names. A guide to the Summary of the MSA is provided on the inside front cover.

1.2 Resource Management Planning

The Federal Land Policy and Management Act (FLPMA) (43 United States Code [USC] 1711) of 1976 requires the BLM to develop RMPs and to update or revise the RMP when appropriate. The approach to this revision process includes building on experience, new science, and working with collaborators. The existing Kemmerer RMP was completed in 1986. Since 1986, the Kemmerer RMP has undergone two maintenance actions to update the RMP.

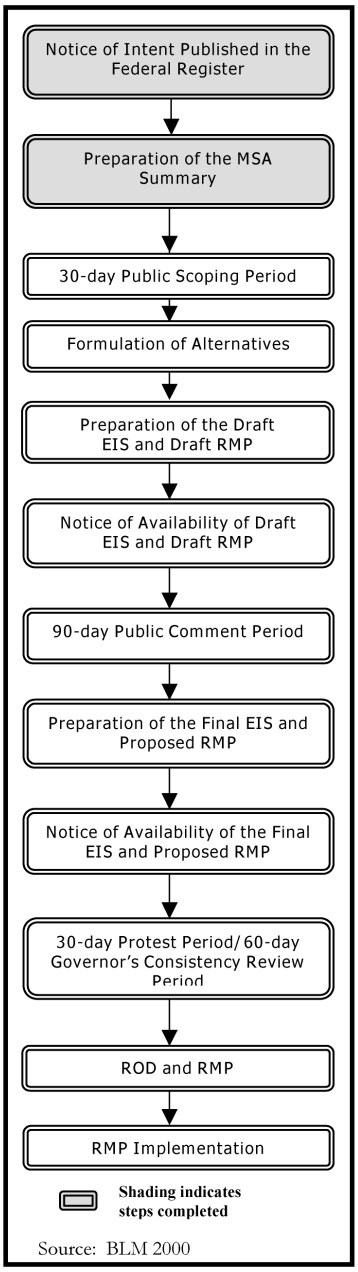
BLM-administered acreage by county:	
Lincoln	832,492 acres
Sweetwater	184,143 acres
Uinta	404,785 acres

Currently, the BLM is revising the RMP for the Kemmerer Field Office. This RMP will provide future direction for managing 1.4 million acres of BLM-administered surface land and 1.6 million acres of BLM-administered mineral estate in Lincoln, Sweetwater, and Uinta counties in southwestern Wyoming.

The RMP is a set of comprehensive, long-range decisions concerning the use and management of resources administered by the BLM. In general, an RMP does two things: 1) it provides an overview of goals, objectives, and needs associated with public land management; and 2) it considers multiple use conflicts or issues driving the preparation of the RMP.

This summary has been distributed for public and agency review. Scoping meetings are scheduled November 17 through 19, 2003. After this period, the BLM and cooperators will begin the formulation of alternatives and preparation of the Draft EIS. A diagram of the RMP revision process is provided on this page.

Where do we go from here?



1.3 Why Conduct the Management Situation Analysis?

The MSA is part of the RMP planning process as described in 43 Code of Federal Regulations (CFR) 1600 and planning program guidance in the Land Use Planning Handbook (BLM Handbook H-1601-1 [BLM 2000]). The MSA is an in-depth assessment of the various resources and uses on public lands. It is a comprehensive look at present conditions of the resources, current management practices, and opportunities for change. Foremost, the MSA provides baseline information for developing management alternatives. The MSA Summary is used to inform collaborators, and as the basis for formulation of alternatives.

1.4 Collaborative Planning

A successful RMP revision depends on the ability of the BLM and other interested parties, stakeholders, tribal representatives, and agencies to collaborate effectively with each other. Understanding between and input from all collaborators during the RMP revision process are critical components of this process. The desire to work together must be balanced with the need to move forward and meet tight time frames. Communication is an important component of collaborative planning. Information on how to contact the BLM is provided in Chapter 3.0.

The BLM has invited numerous partners and agencies to become cooperators in the RMP revision process. These cooperators will assist the BLM in providing a wide variety of information to interested parties in support of the effort.

Potential cooperators include:

- Bureau of Reclamation
- Lincoln County Commissioners
- Lincoln County Conservation District
- State of Wyoming
- Sweetwater County Commissioners
- Sweetwater County Conservation District
- United States Environmental Protection Agency (USEPA), Region 8
- Uinta County Commissioners
- Uinta County Conservation District

The BLM recognizes all Indian tribes that have historically and traditionally used land in the planning area and treats them as sovereign nations. The BLM has initiated consultation with the Eastern Shoshone, Shoshone-Bannock, Northern Arapaho, and Northern Ute Tribes in the planning area. An important component of this process is to continue to foster meaningful relationships with these tribes in order to understand and incorporate tribal culture, resources, needs, interests, and expectations into the RMP revision process.

CHAPTER 2.0 WHAT TOPICS WILL THE RESOURCE MANAGEMENT PLAN REVISION INCLUDE?

This chapter includes a discussion of the RMP revision topics in alphabetical order. Topics were selected based on the resources or uses that are managed by BLM in the planning area. Wild horses and burros were initially considered, but after further evaluation were eliminated from further discussion in the Summary of the MSA since there are no herds in the planning area.

A brief overview, discussion of current management practices, list of issues and concerns, and summary of management opportunities is included for each resource.

- Air Quality
- Cultural Resources
- Fire Management
- Fisheries and Wildlife Resources
- Geology and Geologic Hazards
- Health and Safety
- Lands and Realty
- Mineral Resources - Leasables
  - Coal
  - Oil and Gas
  - Trona
  - Other
- Mineral Resources - Locatables
- Mineral Resources - Salables
- Paleontology
- Rangeland Management
- Recreation
  - Off-Highway Vehicles
- Socioeconomic Conditions
- Soil
- Special Management Areas
- Special Status Species
  - Animals
  - Plants
- Transportation and Access
- Vegetative Resources
  - Forest Communities
  - Grassland and Shrubland Communities
  - Invasive, Nonnative Plant Species
  - Riparian and Wetland Communities
- Visual Resource Management
- Water Resources

2.1 Air Quality

2.1.1 Overview

The basic framework for controlling air pollutants in the United States (U.S.) is mandated by the 1970 Clean Air Act and its amendments and the 1999 Regional Haze Regulations. The Clean Air Act addresses criteria air pollutants, state and national ambient air quality standards for criteria air pollutants, and the Prevention of Significant Deterioration program. The Regional Haze Regulations address visibility impairment.

Wyoming Ambient Air Quality Standards (WAAQS) and National Ambient Air Quality Standards (NAAQS) set the absolute upper limits for criteria air pollutant concentrations at all locations to which the public has access. The WAAQS and NAAQS are legally enforceable standards. Concentrations above the WAAQS and NAAQS represent a risk to human health. State standards must be equally as strict or more strict than federal standards.

Air quality in the planning area is considered excellent; however, current and complete criteria air pollutant concentration data for the area are not available. The State of Wyoming has used monitoring to determine that the Kemmerer Planning Area region is in compliance with WAAQS and NAAQS. The best available data on concentrations of criteria air pollutants relevant to the Kemmerer region are shown in Table 1 and discussed below.

Table 1. Background Criteria Air Pollutant Concentrations

Pollutant	Averaging Time	NAAQS (µg/m3)	WAAQS (µg/m3)	Background (µg/m3)
Carbon Monoxide (CO)	1 hour	40,000	40,000	2,299
	8 hour	10,000	10,000	1,148
Nitrogen Dioxide (NO_2)	Annual	100	100	3.4
Ozone (O_3)	1 hour	235	235	169
	8 hour	157	157	147
Particulate Matter 10 microns or less (PM_{10})	24 hour	150	150	47
	Annual	50	50	16
Particulate Matter 2.5 microns or less ($PM_{2.5}$)	24 hour	65	65	15
	Annual	15	15	5
Sulfur Dioxide (SO_2)	3 hour	1300	695	29
	24 hour	365	260	18
	Annual	80	60	5

Nitrogen Dioxide. Nitrogen dioxide (NO_2) concentration data collected at the Green River Basin Visibility Study site from January to December 2001 were 3 percent of the WAAQS and NAAQS. Monitoring of other nitrogen-containing pollutants shows that concentrations at Centennial and Rocky Mountain National Park of nitric acid (HNO_3), nitrate (NO_3^-), and particulate ammonium (NH_4^+) are fairly low and are not increasing over time. Because the chemistry of nitrogen-containing pollutants is complex, it would be inappropriate to infer NO_2 concentrations from concentrations of HNO_3, NO_3^-, and NH_4^+. It is unlikely that high NO_2 concentrations would occur with low measured concentrations of other nitrogen-based pollutants.

Sulfur Dioxide. Sulfur dioxide (SO_2) concentrations measured at the LaBarge study area in the 1980s were less than 20 percent of the WAAQS and NAAQS. More recent SO_2 data, as well as sulfate (SO_4^{--}) data, were collected in Pinedale. SO_2 concentrations in the Pinedale region are consistent with concentrations typical of remote areas. These data suggest that SO_4^{--} concentrations near the Kemmerer region are well below urban levels, but above levels typical in remote areas.

Ozone. Ozone (O_3) concentration data were collected at the Green River Basin Visibility Study site from June 10, 1998 to December 31, 2001. O_3 concentrations were 94 percent of the WAAQS and NAAQS. O_3 data

collected in Pinedale show that mean annual O_3 concentrations have remained steady from 1989 through 1999, are typical for remote areas in the western U.S. (Seinfeld 1986), and are well below the NAAQS and WAAQS.

Particulate Matter. Mean annual particulate matter 10 microns or less (PM_{10}) concentrations collected from the Carbon County Underground Coal Gasification site in 1994 and 1995 were 32 percent of the NAAQS and WAAQS, and mean annual particulate matter 2.5 microns or less ($PM_{2.5}$) concentrations were 33 percent of the NAAQS and WAAQS. Particulate matter was also monitored by the State of Wyoming in Lincoln County. These data show no exceedences of the PM_{10}.

Visibility. Annual visibility was monitored in the Bridger Wilderness from 1988 through 1999, the area closest to the planning area. Visibility on the 20 percent cleanest days varies from 136 to 168 miles. Average visibility varies from 96 to 114 miles. Visibility for the 20 percent haziest days varies from 56 to 76 miles. Trend analysis of Bridger Wilderness visibility data reveals no significant trend of worsening visibility from 1989 through 1999.

Deposition. Total deposition of pollutants through both wet and dry processes measured at Pinedale from 1990 through 1999, the station closest to the Kemmerer Planning Area, is at levels well below those that can cause effects to either aquatic or upland areas.

2.1.2 Current Management Practices

The air quality in the Kemmerer Planning Area is managed by the Wyoming Department of Environmental Quality (DEQ) – Air Quality Division (AQD) and USEPA. Existing air quality programs cover various aspects of air quality issues, including New Source Review, operating permits, equipment emissions standards, and prescribed fire.

2.1.3 Issues and Management Concerns

No air quality specific issues have been identified to date.

2.1.4 Management Opportunities

This opportunity is derived from an analysis of the current management situation and is intended to stimulate additional management opportunity discussion.

Since air quality regulation in the planning area is under the direct administration of Wyoming DEQ-AQD and USEPA Region 8, BLM will continue to coordinate with these agencies.

2.2 Cultural Resources

2.2.1 Overview

The BLM is legally mandated to identify, evaluate, and manage cultural resources as part of its multiple use management practices.

Cultural resources are the products of human history in the form of materials produced by human workmanship or use, and elements of the natural environment that were altered by people's activities. Examples in the planning area include: historic artifacts, buildings, mines, trails, railroads, ditches and trash dumps; historic landscapes from the last two centuries; archeological sites with stone tools and flaked debris from their production; remnants of animals and plants produced by food processing; the remains of fires, rock art, and other evidence of ancient human activity. Physical manifestations of human activity must normally be more than 50 years old to be considered significant cultural resources deserving preservation and protection; however, sites, structures, or objects related to exceptional historical events within the past 50 years may also be considered significant cultural resources. Cultural resources may also include Traditional Cultural Properties (TCP), which are properties that are critical to a living community's beliefs, customs, and practices.

More than 8,000 cultural resources have been documented to date on lands administered by the BLM within the Kemmerer Planning Area. Approximately 84 percent of the recorded cultural resources are prehistoric sites that represent human activities in the area for about 12,000 years prior to the beginning of the historic period in the 19th century. The remaining 16 percent of recorded cultural resources are historic sites related to the fur trade, emigration, early settlement and ranching, communications and transportation networks, and natural resource extraction industries. Historic sites include trails that were associated with overland emigration, frontier military activities, early transportation and communications, and some of the earliest oil field industrial sites in Wyoming. More than 400 miles of designated National Historic Trails pass through the Kemmerer Planning Area, of which over 200 miles cross BLM lands including the primary route of the Oregon-California Trail, the Mormon Trail, the Pony Express Route, the Slate Creek Cutoff, the Dempsey-Hockaday Trail, the Sublette Cutoff, and the Lander Road. These trails are depicted on Figure 2. TCPs have not been identified on BLM lands within the Kemmerer Planning Area to date.

Cultural resources are usually identified and documented during surveys conducted by professional archeologists, historians, architectural historians, or ethnographers. More than 4,400 cultural resource surveys have been conducted on BLM-administered lands in the Kemmerer Planning Area. These inventories examined only about 10 percent of the entire planning

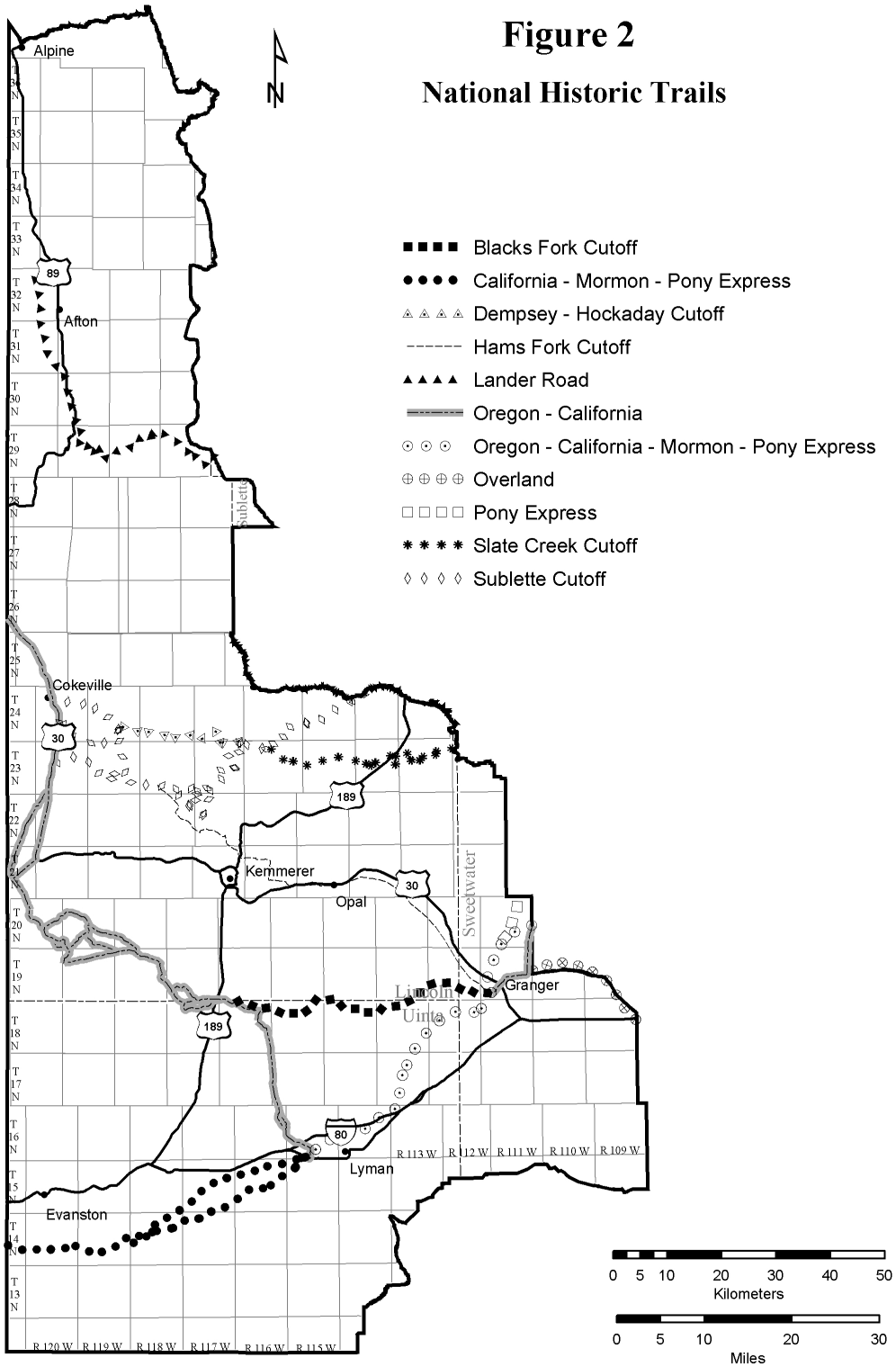


Figure 2
National Historic Trails
Blacks Fork Cutoff
California - Mormon - Pony Express
Dempsey - Hockaday Cutoff
Hams Fork Cutoff
Lander Road
Oregon - California
Oregon - California - Mormon - Pony Express
Overland
Pony Express
Slate Creek Cutoff
Sublette Cutoff
Alpine
Afton
Cokeville
Kemmerer
Opal
Granger
Lyman
Evanston
Sublette
Sweetwater
Lincoln
Uinta
89
30
189
80
0 5 10 20 30 40 50
Kilometers
0 5 10 20 30
Miles

area, predominantly in the central portion of the planning area, where extensive oil and gas exploration and development have occurred during the past 30 years. Inventory of cultural resources is far from complete within the Kemmerer Planning Area.

2.2.2 Current Management Practices

Most cultural resource inventories and site evaluations within the Kemmerer Planning Area are in direct response to a specific land use proposal. BLM will continue to preserve and protect significant cultural resources and ensure that they are available for appropriate uses by present and future generations

2.2.3 Issues and Management Concerns

The various uses of BLM-administered public lands will continue to require BLM to manage cultural resources; minimize conflicts between uses of cultural resources and other uses of public lands; and provide for appropriate mitigation of unavoidable adverse effects on cultural resources prior to their disturbance or destruction. Issues and concerns associated with the management of cultural resources include:

- Surface-disturbing activities have the potential to affect cultural resources.
- Evaluating the historic setting and landscape for National Historic Trails and other significant cultural sites.
- Native American consultation to identify possible TCPs and other cultural or sacred areas of importance to the tribes.

2.2.4 Management Opportunities

The management opportunities discussed in this section do not comprise an exhaustive list of opportunities before the Kemmerer Field Office, nor do the opportunities discussed in this section represent conclusions or decisions. These opportunities are derived from an analysis of the current management situation and are intended to stimulate collaborator discussion and input during scoping. Select management opportunities within the Kemmerer Planning Area include:

- Continue to allocate all cultural resources to the appropriate uses and ensure their management.
- Complete a Class I Regional Overview of the planning area and categorize geographic areas as high, medium, or low priority for future inventory of cultural properties.

- Continue to identify and nominate significant cultural properties to the National Register of Historic Places.
- Consider withdrawals on land parcels to protect significant cultural resources, well-preserved trail segments, and Native American culturally sensitive properties from new land developments.
- Consider a No Surface Occupancy designation within the boundaries of the Bridger Antelope Trap and any other significant properties that are determined appropriate to preserve their outstanding values.
- Coordinate with the BLM State Office and other field offices regarding a process for analyzing project effects on the historic setting of National Historic Trails.

The following use allocations help to ensure management of cultural resources.

1. Scientific Use – permit appropriate research, including data recovery;
2. Conservation for Future Use – propose protective measures and designations;
3. Traditional Use – consult with tribes and determine limitations;
4. Public Use – determine limitations and permitted uses;
5. Experimental Use – determine nature of experiment; and
6. Discharged from Management – remove protective measures.

- Consider effects of proposals on the historic setting of National Historic Trails using the principles of Visual Resource Management (VRM).
- Map zones of low, medium, and high probability for presence of various types of cultural resources.

2.3 Fire Management

2.3.1 Overview

The Kemmerer Planning Area is composed of a variety of vegetation types that are susceptible to fire including sagebrush and grassland communities at the lower elevations, and mixed mountain shrub, aspen, and conifer stands at higher elevations. In mixed conifer stands, fuel sources include dead and down as well as standing timber with heavy fuel loading because of past fire suppression, drought, and insect infestation. Although aspens are not as susceptible to fire as are conifers, they will burn and carry fire during the late fall and during drought conditions.

The wildland fire season generally runs from July to October. Historic fire data indicates that since 1982, there has been an average of 5 to 6 fires per year in the Kemmerer Planning Area. These fires have ranged from less than one acre to 12,000 acres.

Over the past 100 years, fire has been suppressed in the planning area, causing a general buildup of vegetation and deadwood, as well as late successional, decadent and dying plant communities. Fire suppression has allowed sagebrush and juniper to become a more prevalent component of grassland communities. In forested areas, fire suppression has increased the amount of fuel, and increased the number of saplings and small, early seral stage trees, making these areas more prone to catastrophic fires. Also, extreme drought conditions, over the past few years, have made vegetation less resistant to fire. Lightning is the primary cause of most fires within the Kemmerer Planning Area. Human-caused fires are typically a result of fireworks, woodcutting, or camping.

2.3.2 Current Management Practices

The Kemmerer Field Office fire management program focuses on two categories of fires – unplanned and planned. Unplanned fires are those that occur as the result of an act of nature, such as lightning, or occur either as human accident or by intent to cause damage. Planned or prescribed fire is used in a controlled manner for beneficial purposes such as improving habitat and plant community health and for reducing hazardous fuels. Prescribed fire has been used extensively and successfully in the Kemmerer Field Office over the last 12 years to improve the health of plant communities.

The BLM will emphasize an appropriate management response (AMR) to naturally caused wildland fires. An AMR will involve a wide range of fire management options, which might include wildland fire use, confining or containing a wildland fire so it stays within a predetermined boundary, or aggressively and quickly suppressing the fire. On BLM administered lands within the Kemmerer Planning Area, AMR within the Fire Management and Implementation Plan (1998), provides guidance in the event of wildland fire to enhance or protect natural resources.

The Kemmerer Field Office has identified current fire management objectives and strategies for BLM administered lands. For example, the use of heavy equipment for fire management will be minimized on all public lands. Vehicle tracks, fire lines, and emergency access routes will be rehabilitated to prevent erosion and continued use. Additionally, the BLM will promote public education; seek compensation for suppression costs of trespass fires; manage wildland and prescribed fire to maintain or improve biological diversity and the health of vegetation on public land; and protect resources at risk.

Site specific fire management objectives and strategies have been identified for nine geographic areas within the Kemmerer Planning Area including Smithsfork and Raymond Mountain, Hamsfork and Rock Creek, Green

River and Seedskadee, Slate Creek, Bridger Valley and Granger, Bear River Divide, Collett Creek and Twin Creek, Meeks Cabin, and Afton and Evanston.

2.3.3 Issues and Management Concerns

Fire management issues and concerns include:

- Pre- and post-burn grazing management;
- Excess hazardous fuel loading in forest communities;
- Wildfire rehabilitation;
- Smoke management;
- Cheatgrass invasion;
- Wildland/urban interface; and
- Aerial photography interpretation of past wildfire occurrence using Geographic Information System (GIS).
- Incorporate state and federal policies and guidance into fire management planning.

2.3.4 Management Opportunities

Opportunities for fire management include:

- Continuing to coordinate with local volunteer fire departments to increase communication and clarify roles for fire suppression in the area.
- Continuing to develop fuel treatment projects in areas with high social or natural value.
- Identify landscape level fire management goals and objectives, including desired wildland fire conditions.
- Identify management strategies and actions that can be used to meet desired future conditions and underlying land uses.
- Identify criteria for establishing fire management priorities.
- Identify restrictions on fire management practices that may be implemented as needed to protect natural or cultural resource values.

2.4 Fisheries and Wildlife Resources

2.4.1 Overview

2.4.1.1 Fisheries

Public lands within the Kemmerer Field Office support approximately 509 miles of streams. Though the majority of streams are perennial, they vary in base flow from less than 1 cubic foot per second (cfs) to over 800 cfs. In drought years, the streams of lesser flow may become intermittent. Most streams with low or intermittent flow are generally unsuitable for fisheries.

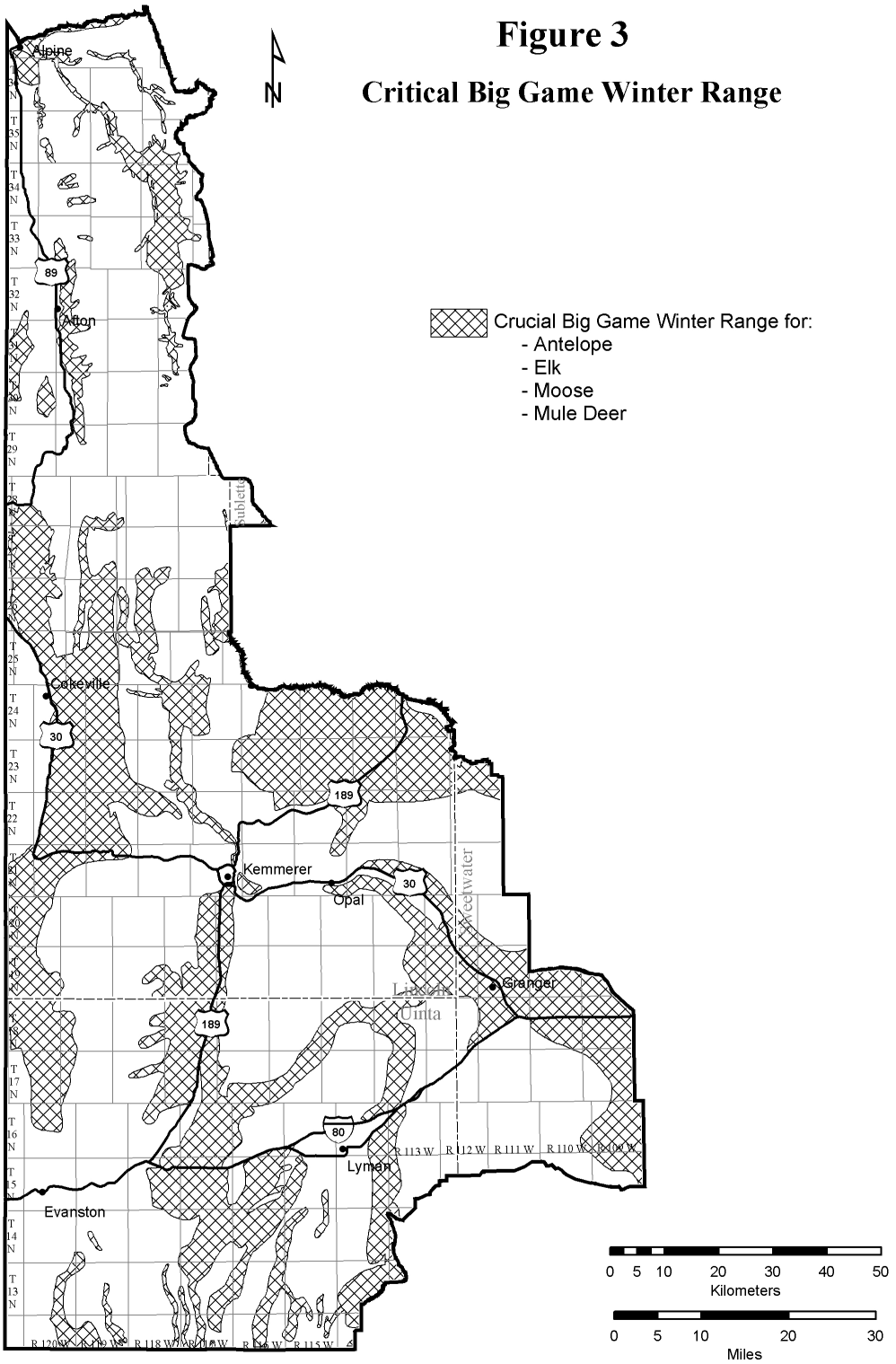
There is a fairly diverse composition of fish species that inhabit the waters on public lands within the Kemmerer Planning Area. These species are adapted to a wide range of habitats, from the cold, rapid waters of the mountainous areas to the slow, turbid waters of the high desert. Three subspecies of cutthroat trout and the mountain whitefish represent the only native salmonids within the planning area from the 3 major drainages: the Bear River, the Green River, and the Snake River.

Introductions of nonnative fish to Wyoming have resulted in varied effects on the state's fisheries. The common carp, introduced in the 1880s as a food source, can be a nuisance in some situations, but is found only in the lower Hams Fork River, Green River, and possibly the Blacks Fork River. Many game fish introductions have resulted in positive economic impacts for the state through recreational fishing. There are also some negative impacts to native cutthroat populations through competition, predation, and hybridization.

Fishery habitat conditions are closely tied to stream riparian conditions. Riparian vegetation moderates water temperatures, adds structure to the banks to reduce erosion, provides in-stream habitat for fish, and provides organic material for aquatic insects. The measure used to evaluate riparian health on BLM lands is Proper Functioning Condition (PFC). Proper Functioning Condition represents the name of the evaluation procedure and the minimum desired level of riparian resiliency. Streams with lower condition ratings are less likely to sustain certain fish species as habitat quality declines. As riparian habitats degrade, erosion and sediment transport increases, temperature fluctuations increase, oxygen content can reach critically low levels, and streams widen and become shallower. As streams improve in condition, some sensitive species could naturally return or be reintroduced to streams that are not currently in PFC.

Figure 3

Critical Big Game Winter Range



2.4.1.2 Wildlife

The Kemmerer Planning Area encompasses diverse and important habitats for seasonal use by big game, upland birds, waterfowl, non-game birds and mammals, native fish, reptiles, and amphibians. Habitats of special importance include riparian habitats, cliff and talus habitats, and winter ranges. The diversity of habitats and landscapes within the Kemmerer Field Office provide important areas for breeding, foraging, migration, and wintering. The critical big game winter range is depicted in Figure 3.

The habitat and wildlife within the planning area are representative of Great Basin flora and fauna. Most vegetation in the area lies within the foothills scrub zone and is dominated by sagebrush. The Kemmerer Field Office also contains timbered mountain slopes, some desert and basin communities, and a small amount of alpine vegetation. These plant communities provide a broad range of habitat types supporting diverse assemblages of species. Sagebrush shrublands and grasslands provide yearlong habitat for mule deer and pronghorn. Aspen and mountain shrub communities provide habitat for elk and nesting sites for a variety of bird species. Large and small rimrock complexes in canyons and along ridgelines provide nesting sites for swallows, pigeons, golden eagles, falcons, turkey vultures, and a number of hawk species. Rocks and canyons also provide denning sites for mountain lions and bobcats, and yearlong habitat for small mammals including ground squirrels, wood rats, and rabbits.

The Bear River Divide, Rock Creek Ridge, and Sublette Range form a major ridgeline that runs north and south along the west side of the plan area. Commissary Ridge, Oyster Ridge, and The Hogsback form a ridgeline running north and south through the central portion of the plan area. These two major ridgelines are very important migratory pathways for migratory raptors and neotropical migratory birds. The Wyoming Audobon Society designated the Kemmerer Important Bird Area in 2003.

Water sources are important to the location and survival of plants and animals within the planning area. Seeps and springs provide water and meadow habitats important during birthing and rearing for big game. Riparian habitats are used extensively by wildlife, including neotropical birds, in the spring, summer, and fall months. Small, shallow lakes, reservoirs, ponds and wetlands provide seasonal habitat for moose as well as resident and migratory waterfowl and shorebirds including American avocet, killdeer, Canada geese, mallard, and cinnamon teal. The small streams and spring outlets provide wet meadow and streamside riparian habitats used by a variety of species.

2.4.2 Current Management Practices

2.4.2.1 Fisheries

Fisheries habitat is managed according to the guiding principles outlined in a number of national level programs, including BLM Fish and Wildlife 2000, Riparian-Wetlands Initiative for the 1990s, and the Recreational Fisheries Program. Additionally, the Standards for Healthy Rangelands and Guidelines for Livestock Grazing Management address management goals on a landscape scale. Standards include goals for riparian and wetland structure and function, as well as maintenance of adequate habitat conditions to support diverse plant and animal species. Standards are achieved through a number of plans and agreements, including the Thomas Fork Aquatic Habitat Management Plan, the Bonneville Cutthroat Trout Interagency Five-Year Plan, and the Conservation Agreement and Strategy for Colorado River Cutthroat Trout.

2.4.2.2 Wildlife

The BLM coordinates activities in the Field Office with the Wyoming Game and Fish Department (WGFD) in managing fish, wildlife, upland game bird and waterfowl habitat to achieve and maintain sustainable populations and distributions. The WGFD is responsible for managing the populations while the BLM is responsible for managing the habitats for the species. Through habitat management and restoration, the BLM intends to maintain and reestablish populations of native species that historically have been found within the planning area. Hunting is allowed throughout the planning area in accordance with the State of Wyoming regulations.

Fish and wildlife habitat is managed according to the guiding principles outlined by a number of national level programs, including the BLM Wildlife 2000, the Riparian-Wetlands Initiative for the 1990s, the Strategy for Future Waterfowl Habitat Management on Public Lands, the Watchable Wildlife program, and Partners in Flight strategies.

Management goals for wildlife and wildlife habitats are achieved through a variety of actions including minimization of grazing conflicts, establishment of zones with special management considerations, and delineation of important habitat areas.

2.4.3 Issues and Management Concerns

2.4.3.1 Fisheries

Water depletion has been identified as a fisheries resource management issue.

2.4.3.2 Wildlife

Areas of concern include:

- Range management;
- Renewable and nonrenewable energy development;
- Critical and other important habitats;
- Recreational and OHV use; and
- Native and nonnative species interactions.

2.4.4 Management Opportunities

Opportunties for managing fish and wildlife resources are briefly discussed below.

2.4.4.1 Fisheries

Management opportunities for fisheries and fish habitat are the same as those for special status fish species, including the following possibilities:

- Consider restriction of disposal of aquatic and riparian/wetland areas to exchange only (no sales) for lands of equal or better value (both functional and monetary values).
- Consider on a case-by-case basis permanent structures and linear facilities (e.g., roads, pipelines) in aquatic and riparian/wetland areas.
- Seek opportunities to conserve important or key fisheries habitats to provide for 'meta-population' connectivity of special status fisheries.
- Revise and renew the Bonneville Cutthroat Trout Interagency Five-Year Plan, which expired in 1997, with WGFD and United States Forest Service (USFS).
- Coordinate with WGFD on planning efforts.

2.4.4.2 Wildlife

Emphasis is being placed on maintaining species diversity and keeping native ecosystems healthy to keep additional species from becoming listed. Possible management opportunities include:

- Consider ACEC designation for northern Crucial Big Game Winter Ranges (Slate Creek Winter Range, Rock Creek Winter Range, Bridger Creek Winter Range).

- Review existing fences, especially those running perpendicular to migration corridors, for modification or removal.
- Coordinate with adjacent landowners to develop wildlife-friendly fences.
- Continue to develop the Wheat Creek Meadows Habitat Management Plan.
- Continue to identify wildlife habitat improvement opportunities.

2.5 Geology and Geologic Hazards

2.5.1 Overview

Seismic activity, landslides, rock falls, avalanches, and abandoned mines are all geologic hazards that occur in the Kemmerer Planning Area.

Several faults in the Kemmerer Planning Area may result in seismic activity of varying magnitude. Seismic hazards result from the presence of high-angle faults in the Overthrust Belt (zone of intense structural deformation in the western half of the Kemmerer Field Office). An example of a high-angle fault is the Rock Creek fault, located about 12 miles west of Kemmerer. Other faults in the area include the Whitney Canyon fault north of Evanston, Wyoming, and faults near the Crawford Mountains near the western border of Wyoming and Utah. Magnitude of a particular fault hazard depends on many factors, including the time interval between movements.

Landslides and earthflows are common in the Overthrust Belt where steep slopes, relatively high moisture, and impermeable subsoils occur. The contact between the Green River and Wasatch formations is particularly susceptible to slumping, and the Wasatch Formation itself is prone to swelling and failure due to the presence of bentonite clay (Rubey et al. 1975). A massive earth flow of approximately 50 acres occurred in the Wasatch Formation inside Fossil Butte National Monument west of Kemmerer. This movement caused major damage to a rail line, requiring extensive earthwork to restore service. The rest of the Kemmerer Planning Area has low to moderate landslide potential, although certain formations have higher potential.

Rock falls are common in road cuts and stream cuts that cross the general north-south structural orientation of formations in the Overthrust Belt.

Steep slopes on ridges, especially in the northwest quarter of the Kemmerer Planning Area, contain avalanche chutes, which can be active under certain snow conditions. Human activities, as well as natural processes such as earthquakes, can start landslides and avalanches. Additionally, vegetation

removal and road building in high landslide potential areas can trigger landslide movement.

Hazards are associated with abandoned underground mines including adits and shafts, as well as subsidence holes over the mines. Another hazard is underground mine fires, which can lead to surface fires and subsidence. Fires exist south of Kemmerer at the abandoned Brilliant Coal Mine.

In addition to abandoned coal mines, hazards are associated with past phosphate mining and prospecting areas. These sites are primarily in the more mountainous areas of the planning area northwest of Kemmerer. Several abandoned phosphate mining sites are in various stages of reclamation at the present time.

2.5.2 Current Management Practices

Activities in areas of known geologic hazards are restricted. Geologic hazard information is considered during the environmental analysis of individual proposals and, when necessary, the Kemmerer Field Office develops appropriate mitigation measures.

The Surface Mining Control and Reclamation Act of 1977 provides the authority and funding to reclaim abandoned mines as administered through the Wyoming DEQ. Additional information on geologic hazards is generated through ongoing inventories conducted by the Wyoming State Geological Survey and the Wyoming DEQ Abandoned Mine Lands (AML) Division.

2.5.3 Issues and Management Concerns

Abandoned mine safety is an important geologic hazard management issue.

2.5.4 Management Opportunities

An opportunity for management of geologic hazards is the potential for expedition of the approval of abandoned mine reclamation projects. Additional opportunities may be developed throughout the RMP revision process.

2.6 Health and Safety

2.6.1 Overview

Health and safety issues are addressed in the Kemmerer Field Office Hazard Management and Resource Restoration program, which is concerned with the health and safety of the general public, BLM employees, and environmental resources. These health and safety issues include both human

and natural hazards. Potential human-created health and safety issues include both permitted and illegal disposal of solid and hazardous wastes, oil spill from pipelines, explosives (e.g., dynamite that could be present in abandoned mines and geophysical sites), abandoned structures and mine shafts. Natural hazards include floods, landslides, avalanches, windstorms, earthquakes, caves, and subsidence areas. Hazardous substances and wastes resulting primarily from illegal dumping and oil and gas activities are the primary health and safety issues within the planning area.

The Wyoming DEQ is responsible for regulating hazardous wastes within the State of Wyoming.

2.6.2 Current Management Practices

The major emphasis of the Hazard Management and Resource program is to reduce risks to visitors and employees, restore contaminated lands, and to carry out emergency response activities. This is accomplished through initial evaluations of project proposals, continued public input of Emergency Planning Committee meetings, and early detection and response to sites that may pose an imminent threat to human health and safety.

The Hazardous Materials Contingency Plan, recently updated by the Kemmerer Field Office, outlines the procedures that BLM personnel should follow when hazardous materials are discovered on BLM lands and identifies whom to contact in such an event. Additionally, the Kemmerer Field Office maintains an Emergency Contingency Plan that provides specific guidance for responses to contaminant releases. The Kemmerer Field Office ensures that responsible parties respond to contaminant releases (hazardous materials and petroleum) that pose an imminent danger to human health and safety or to the environment. BLM-generated hazardous materials are cleaned up in accordance with the State Hazardous Communications (Hazcom) Plan.

With regard to abandoned mines, the DEQ, AML Division has an active reclamation program that includes BLM as a partner. Funding has been made available from DEQ/AML to correct AML safety hazards on BLM lands.

BLM landfill policy is to either close or transfer ownership of all dumpsites that were historically on BLM lands. The Kemmerer Field Office is currently working to transfer the final landfill to comply with this policy. Once illegal dumping sites are located, these dumps are removed to reduce the attraction of additional dumping and minimize safety hazards.

Transportation of hazardous materials across the Kemmerer Field Office is regulated by the Wyoming Department of Transportation (DOT) and the DEQ.

2.6.3 Issues and Management Concerns

Issues and management concerns associated with Health and Safety within the planning area include the following:

- Illegal dumping on BLM lands; and
- Safety concerns (e.g., open adits, vertical shafts, abandoned equipment and structures, and explosives) on abandoned mine sites.

2.6.4 Management Opportunities

Management opportunities associated with health and safety issues within the Kemmerer Planning Area include the following:

- Continue to respond to hazards within the Kemmerer Planning Area in conformance with approved plans and procedures.
- Strive to ensure that users of public lands (e.g., lessees, permittees, operators) are in compliance with applicable hazardous materials laws and regulations.
- Continue to ensure that hazards are addressed quickly and pose no imminent threat to the health and safety of the public.

2.7 Lands and Realty

2.7.1 Overview

The BLM Lands and Realty Program includes rights-of-way (ROW), land acquisition and disposal, easement acquisition, withdrawals, land use authorizations, and trespass identification and abatement.

ROW activities and access efforts include a broad range of projects such as pipelines, utilities, and roads. The land acquisition and disposal activities include exchanges, purchases, donations, and land sales. Withdrawals are formal actions that set aside, withhold, or reserve federal lands for public purposes. These public purposes may include military reservations, administrative sites, national parks, national forests, reclamation projects, recreation sites, and stock and power site reserves.

A variety of regulations and tools allow for the activities of the Lands and Realty Program. FLPMA is the primary statute governing management of public lands, and the primary authority for activities within the lands program. Land status for the Kemmerer Planning Area is depicted in Figure 4.

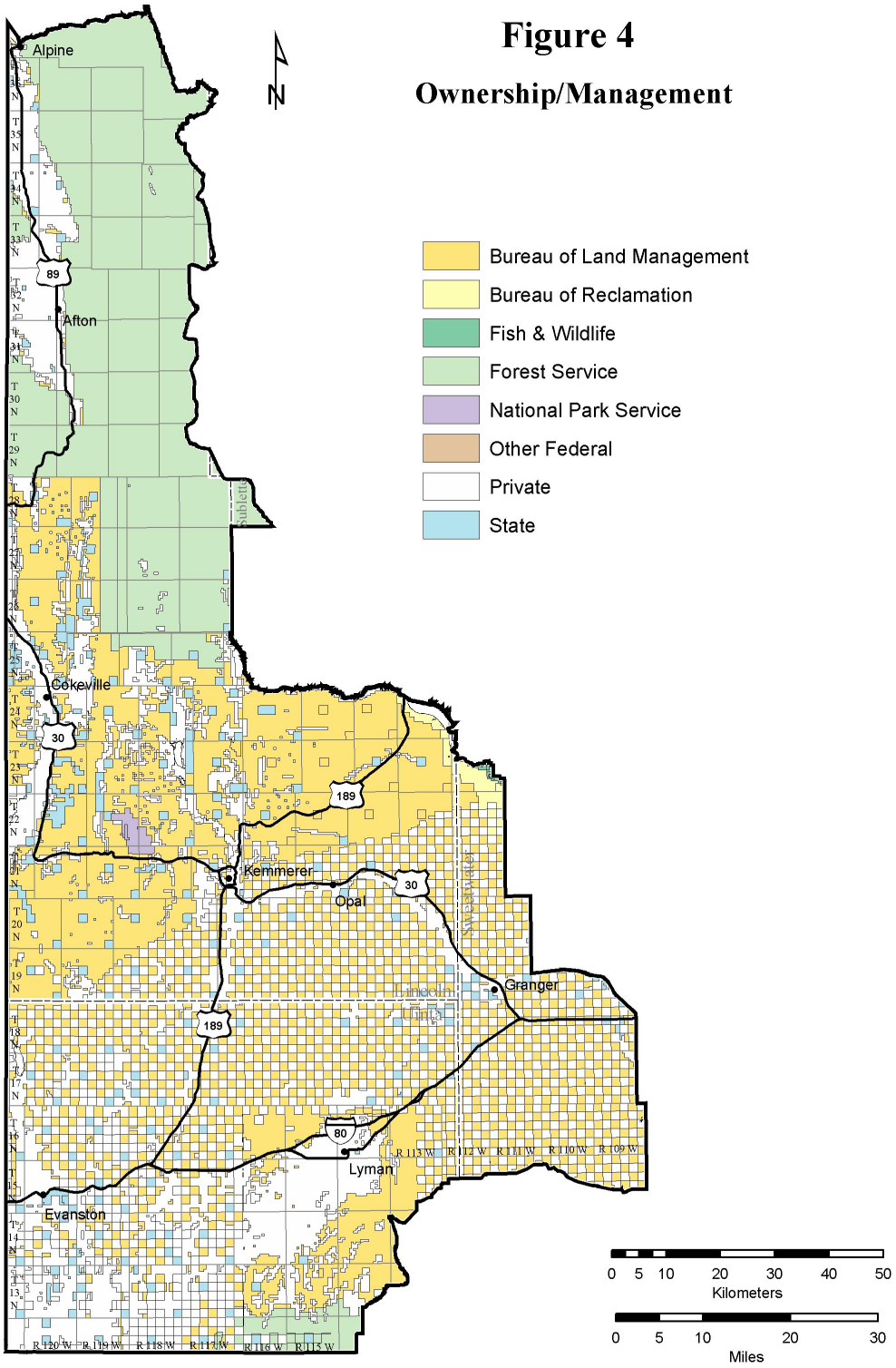


Figure 4
Ownership/Management
N
Bureau of Land Management
Bureau of Reclamation
Fish & Wildlife
Forest Service
National Park Service
Other Federal
Private
State
Alpine
Afton
Cokeville
Kemmerer
Opal
Granger
Lyman
Evanston
89
30
189
80
Sublette
Sweetwater
Lincoln
Uinta
0 5 10 20 30 40 50
Kilometers
0 5 10 20 30
Miles

2.7.2 Current Management Practices

Current lands and realty management is guided by decisions contained in the RMP. Within the Kemmerer RMP Planning Area, the lands and realty program objectives are the following: manage the public lands to support goals and objectives of other resource programs, respond to public requests or land use authorizations, and acquire administrative and public access; where necessary.

ROWs are granted on a case-by-case basis, and the majority of those granted over the past 20 years have been for oil and gas gathering systems, power lines, and roads. Historically, most pipeline ROWs within the planning area are buried. The preferred method of land disposal is exchange.

2.7.3 Issues and Management Concerns

Issues and management concerns associated with the Kemmerer Field Office Lands and Realty program include the following:

- Small, isolated tracks of federal land.
- During oil and gas operations, roads are considered for long-term support of all programs.
- Future ROW grants for oil and gas, renewable energy resources, and other commercial activities include roads, pipelines, and related facilities.

2.7.4 Management Opportunities

Management opportunities associated with lands and realty identified to date include the following:

- Set aside land that might have been identified in the past for disposal because of its small size and proximity in location and manage as open space in association with current national policy.
- Consider corridor designations and coordinate with applicable BLM and USFS planning documents, including those for Idaho, Utah, and Colorado, if necessary.
- Provide consistent coordination of on-lease oil and gas facilities and off-lease or third-party ROW.
- Continue to conduct the review of existing withdrawals.

2.8 Mineral Resources – Leasables

2.8.1 Overview

2.8.1.1 Coal

Coal has been mined in the Kemmerer Planning Area since the late 1800s, primarily in the Evanston and Kemmerer areas. Coal was originally extracted

in underground mines that eventually closed largely because of reduced demand as a result of the conversion of railroad locomotives from coal to diesel fuel. Surface coal mining began around 1950 in the Kemmerer Planning Area, and has been active ever since.

The primary coal reserves include the Adaville, Evanston, Frontier, Cokeville, and Sage Junction formations. The reserves in the Adaville Formation are estimated at one billion tons, based on 13 of the formation's coal seams. One seam in the Adaville exceeds 100 feet in thickness, and another 17 seams appear to be greater than six feet thick. Frontier Formation coals, not presently being mined, have a higher British Thermal Unit (BTU) value than the Adaville coals, and contain beds up to 20 feet thick (Glass 1976). Outcrops of coal-bearing formations in the Kemmerer Planning Area are confined to the Overthrust portion of the area and occur mainly in three north-south-trending belts.

The major surface mining company in the Kemmerer Planning Area is the Pittsburg and Midway Coal Company (P&M), which operates a mine west of Kemmerer. P&M has a total of 8,679 acres of federal coal leases and produced 3,725,983 short tons of coal in the year 2000 from multiple seams in the Adaville formation. Kiewit Mining Company has proposed a new surface coal mine and the project is currently in the surveying and permitting phase.

2.8.1.2 Oil and Gas

Oil and gas reserves in the Kemmerer Planning Area have been the focus of industry attention since commercial discoveries began around the year 1900. Approximately 1,071,449 acres are currently leased for oil and gas development of the approximately 1.6 million acres of oil and gas mineral estate managed by the Kemmerer Field Office. Figure 5 depicts oil and gas leases in the planning area. In addition, approximately 269 billion cubic feet of natural gas and 4.4 million barrels of oil were produced in 2001 (Wyoming Oil and Gas Commission 2002). At the end of 2001, there were over 40 active oil and gas fields in the Kemmerer Planning Area. The BLM predicts that there will be 1,200 future oil and gas wells (including approximately 200 coalbed gas wells) in the Kemmerer Planning Area within the next 20 years (Crockett 2003). Five of the 25 largest gas fields in Wyoming for 2001 were in the Kemmerer Field Office area (Wyoming Oil and Gas Commission 2002). Oil and gas fields are depicted on Figure 6. Some of the oil and gas fields in the Kemmerer Planning Area overlap with the Pinedale Field Office and/or with the Rock Springs Field Office.

Figure 5

Oil and Gas Leases

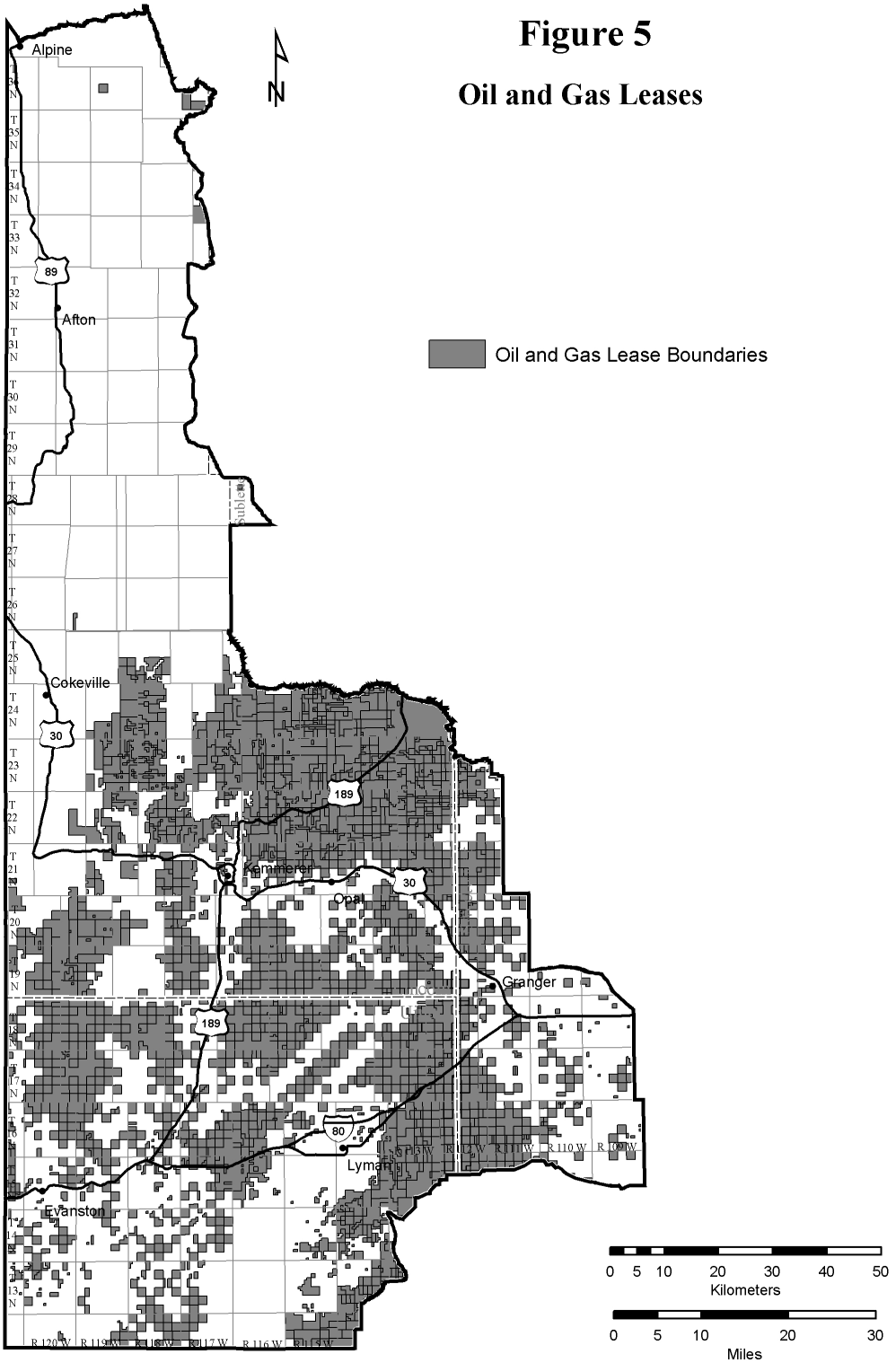


Figure 6

Oil and Gas Fields

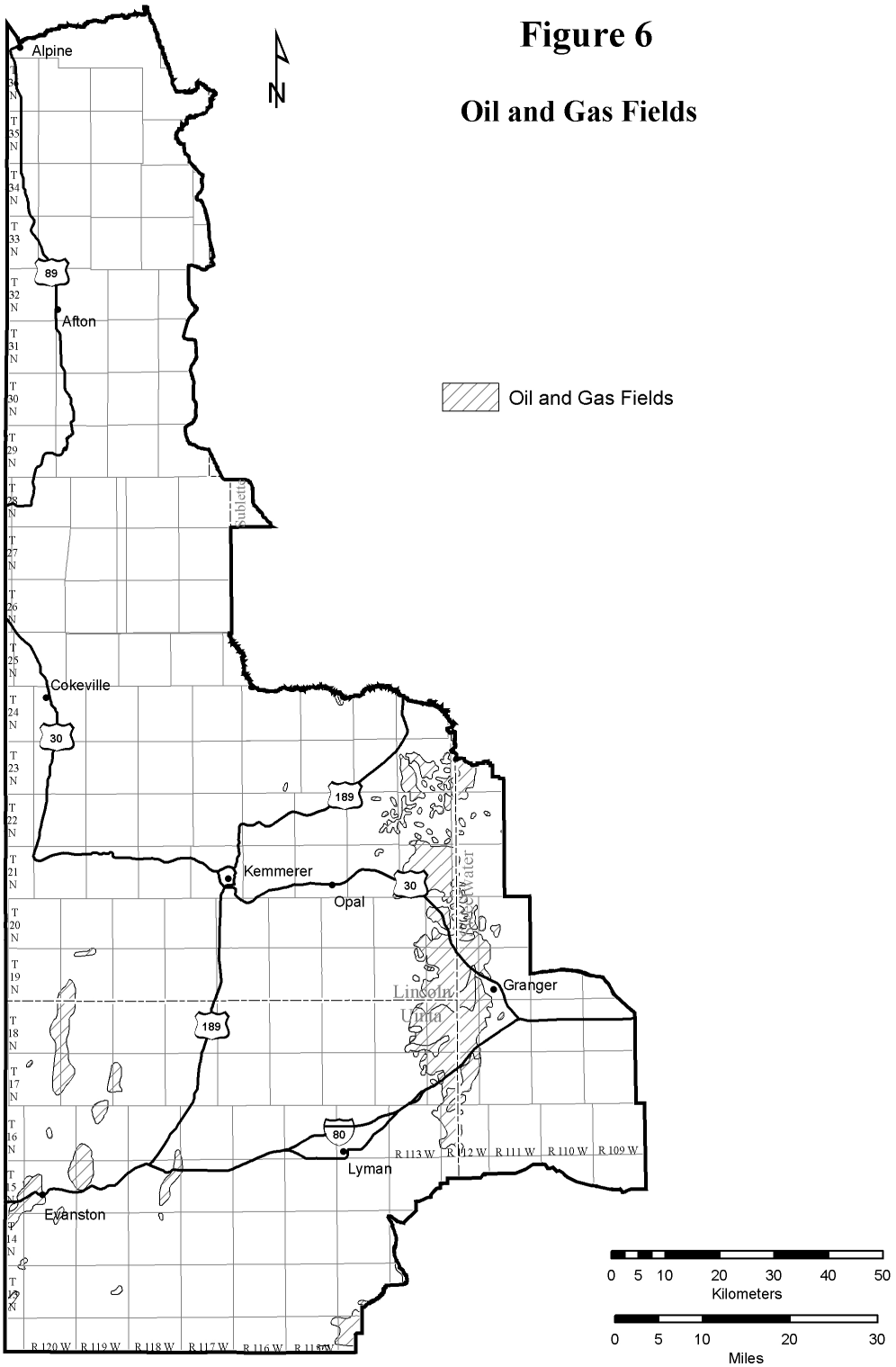


Table 2. Oil and Gas Well Data

Type of Well	Total Wells	Percent Federal
Plugged and Abandoned	1,024	59%
Inactive	40	40%
Completed	1,440	49%
Monitoring	8	50%

Source: Wyoming Oil and Gas Commission 2002.

Table 2 presents oil and gas well information for the Kemmerer Planning Area.

Since the discovery of Utah's Pineview field in 1975 and Ryckman Creek field in 1976, intense exploration, consisting of seismic and drilling programs, has resulted in major discoveries of oil and gas in the so-called fairway of the Overthrust Belt (Ver Ploeg and DeBruin 1982). An extremely important factor in the success of oil and gas exploration in the Overthrust Belt has been the improvement in geophysical techniques and processing of data, enabling companies to decipher more clearly some of the very complex, deep structures in the subsurface which trap oil and gas.

Several coal bed natural gas wells have been drilled on fee or state lands and one well on federal minerals. As of November 2002, several of the coal bed natural gas wells on fee or state land are inactive and several new wells are awaiting completion or pipeline connections. Currently (November 2002) the Wyoming Oil and Gas Commission does not show any coal bed natural gas production in the planning area. However, coal bed methane development is likely to ensue in the planning area given successful pilot-scale testing.

2.8.1.3 Trona

The world's largest known deposit of trona (sodium) is located in southwestern Wyoming and extends into the eastern portion of the Kemmerer Planning Area. Trona was discovered west of Green River, Wyoming in 1938 and mining commenced in 1947. Identified trona reserves in the area total 114 billion tons (BLM 1985). Sites where trona is known to exceed four feet in thickness are part of the Known Sodium Leasing Area (KSLA), which in total covers about 1,100 square miles and half of which is in the Kemmerer Planning Area. The KSLA is depicted on Figure 7.

Trona is a hydrous sodium carbonate mineral, which is refined into soda ash and other products, including sodium bicarbonate, sodium sulfite, sodium tripolyphosphate, and chemical caustic soda. Approximately 1.8 tons of trona is required to produce a ton of soda ash. Soda ash is used in a wide variety of applications: glass production accounts for 50 percent of the domestic use; the chemical industry accounts for 27 percent; soap and detergents, 11 percent; and other users such as the pulp and paper and water

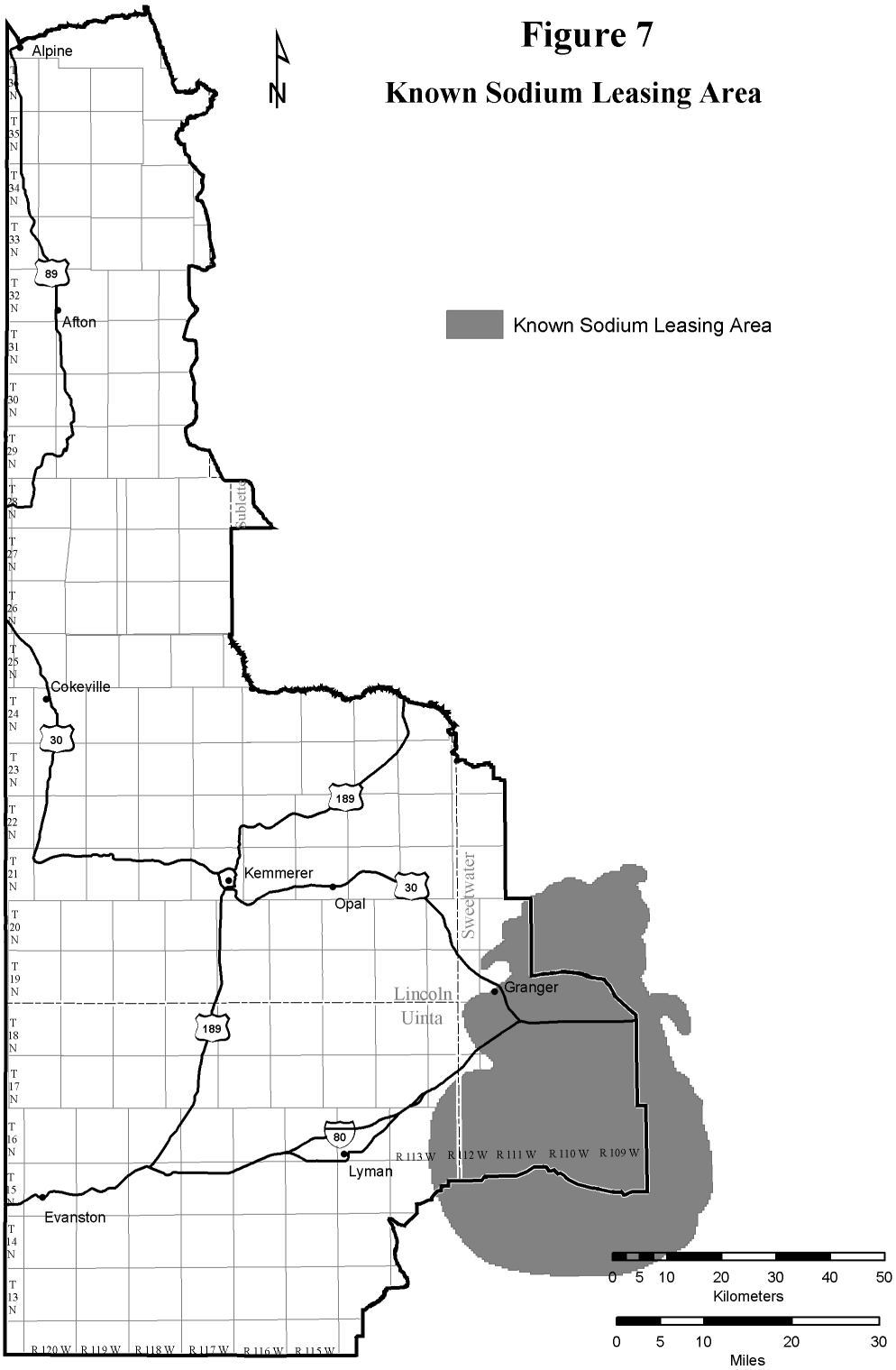


Figure 7
Known Sodium Leasing Area
Known Sodium Leasing Area
N
Alpine
89
Afton
Cokeville
30
189
Kemmerer
Opal
30
Sweetwater
Granger
Lincoln
Uinta
189
80
Lyman
Evanston
R 113 W
R 112 W
R 111 W
R 110 W
R 109 W
R 120 W
R 119 W
R 118 W
R 117 W
R 116 W
R 115 W
0 5 10 20 30 40 50
Kilometers
0 5 10 20 30
Miles

treatment industries make up the remaining 12 percent (United States Geological Survey [USGS] 2002).

Within the Kemmerer Planning Area, FMC Wyoming, Inc., General Chemical Soda Ash Partners, Inc., and Solvay Minerals of Wyoming produce trona from four underground mines. The FMC Granger operation (one of the two FMC mines and processing plants) is currently shut down due to market conditions. FMC and General Chemical have facilities for underground solution mining of trona, both of which are temporarily shut down.

2.8.1.4 Other Leasables

Other leasable minerals in the Kemmerer Planning Area include oil shale, phosphate, and geothermal resources.

The Green River Basin contains an estimated 244 billion barrels of shale oil in the Tipton Shale Member, Wilkins Peak Member, and Laney Member of the Green River Formation. This estimate is based on oil shale that yields at least 15 gallons of oil per ton of rock. Oil shale occurs throughout most of the Green River Basin, and in thin beds (fewer than 4 feet thick) in Fossil Basin. The most significant oil shale resources in the Kemmerer Field Office are located toward the southeastern boundary of the area around Flaming Gorge Reservoir. The beds in the upper part of the Tipton Shale are up to 75 feet thick and yield up to 24 gallons of oil per ton. Overburden is 2,000 to 3,000 feet thick. Other significant oil shale beds in the Wilkins Peak Member and the Laney Member are just to the east of the southeast border of the Kemmerer Planning Area.

Phosphate rock and associated vanadium occurs at the surface in north-south-trending outcrops of the Phosphoria Formation. Mining has occurred in the past in various surface and underground mines, beginning with an underground mine near Cokeville in 1906, which had the first production in Wyoming. The last federal phosphate leases in the Kemmerer Field Office area, relinquished in 1995, were located in the Sublette Range north of Cokeville, Wyoming. Currently, most phosphate rock production in the U.S. is from Florida, North Carolina, Utah, and Idaho.

Hot springs (geothermal resources) occur at Auburn in the Star Valley portion of the Kemmerer Planning Area. Auburn Hot Springs contains numerous vents producing carbon dioxide and hydrogen sulfide gas and saline water ranging from about 68 to 140 degrees Fahrenheit (°F). Several pools contain native sulfur, which was mined from 1947 to 1949 (Rubey 1958). The location of the springs is controlled by northwest-trending high-angle faults (Hinckley and Breckenridge 1977). No other areas in the Kemmerer Planning Area are known to have geothermal potential.

2.8.2 Current Management Practices

2.8.2.1 Coal

For federal coal areas with surface mining potential within the Kemmerer Planning Area: about 5,800 acres containing approximately 25 million tons of coal are acceptable for coal development; about 1,340 acres with approximately 5.7 million tons of coal are acceptable for coal development with certain stipulations and mitigation requirements; about 390 acres with approximately 1.7 million tons of coal are acceptable for further consideration for coal development, but pending on additional studies; and 40 acres of privately owned land containing .2 million tons of federally owned coal are unavailable for coal development.

For federal coal areas with subsurface mining potential within the Kemmerer Planning Area: about 4,800 acres containing approximately 33 million tons of coal are acceptable for development; about 1,891 acres are only acceptable for limited surface operations (i.e., subject to restrictive types and placement of facilities, seasonal restrictions, etc.); about 53 acres containing approximately 0.4 million tons of coal are acceptable for further consideration for coal development; and about 940 acres are acceptable for surface operations and impacts associated with subsurface mining, with certain stipulations and mitigation requirements.

Additionally, the coal screening process established that the BLM would: defer to coal leasing in the event that oil and gas fields are established in competitive coal areas (including subsurface and surface); conduct the coal unsuitability review and multiple use conflict evaluation on a case-by-case basis for some areas not considered in the review; keep the entire Kemmerer Resource Area open to coal resource inventory and exploration; and pursue determination of eligibility of the Bear River City Historic Site for listing in the National Register of Historic Places (NRHP).

2.8.2.2 Oil and Gas

The exploration and development of oil and gas resources is accomplished through three stages of activity, summarized below.

- Categorization – The BLM has developed four categories to describe the conditions placed on public lands for oil and gas leasing.
- Leasing – Lands in the Kemmerer Planning Area are made available for oil and gas production through leasing. Based upon the requirements of the Federal Onshore Oil and Gas Leasing Reform Act of 1987, all lands available

Categories include:

- Category I - open leasing areas subject to standard terms and conditions;
- Category II – open leasing areas subject to seasonal or other minor constraints;
- Category III – open leasing areas subject to no surface occupancy or other similar major constraints; and
- Category IV – areas closed to leasing.

for leasing are first offered in competitive lease sales, which are held quarterly by the State BLM Office.

- Exploration, Development, and Production – Seismic/geophysical surveys are authorized on public lands. An Application for Permit to Drill (APD) must be filed before an operator or lessee can begin any surface-disturbing activities for an oil or gas well. If necessary, conditions of approval are developed for the application, and are used to minimize the impacts to other site-specific resource values.

A combination of federal and state laws and agencies govern oil and gas operations in the Kemmerer Planning Area. Some of the federal laws include the Mineral Leasing Act, Mineral Leasing Act for Acquired Lands, Mining and Minerals Policy Act, FLPMA, and the Combined Hydrocarbon Leasing Act. During the leasing and development stage of oil and gas development the appropriate level of National Environmental Policy Act (NEPA) analysis is performed. The Wyoming Oil and Gas Commission is the state agency in charge of oil and gas development. The Wyoming DEQ regulates surface water discharge and air emissions from oil and gas production and processing. Other water disposal methods may involve additional federal and state agencies.

2.8.2.3 Trona

All unleased public lands within the KSLA are available for leasing consideration. The limited surface occupancy criteria are applied on a case-by-case basis. Leases contain stipulations to ensure that unacceptable adverse impacts to other resources are minimized. Sodium leases are subject to renewal every 10 years after the initial 20-year term.

Prospecting permits outside of the KSLA are considered and possibly modified to ensure consistency with the objectives of the RMP. Prospecting permits may be denied if it is determined that exploration or development impacts are inconsistent with the objectives of the RMP.

In addition to prospecting permits for sodium, exploration licenses may be issued in areas of known sodium resources that are not leased. Known sodium resources are those that are the KSLA boundaries. The Kemmerer Field Office is involved in developing mitigating measures for exploration licenses.

2.8.2.4 Other Leasables

Areas that contain known deposits of oil shale are available for leasing consideration. There is currently no regulatory provision for oil shale leasing, though oil shale leasing occurred in the 1970s under a prototype leasing program to encourage oil shale development.

Prospecting permits for phosphate will be considered in all areas. Appropriate stipulations will be added to protect other resources. Prospecting permits for phosphate may be denied if it is determined that the impacts from exploration or development are inconsistent with the objectives of the RMP. For example, applications for prospecting permits in or near the Raymond Mountain Wilderness Study Area (WSA) will be analyzed to ensure that there would be no unacceptable adverse impacts to other resources. Phosphate leases will be conditioned to avoid adverse impacts to other resources.

Applications for exploration and leasing for geothermal resources are also considered. Currently there are no geothermal leases, and no applications for exploration or leasing.

2.8.3 Issues and Management Concerns

The issues and management concerns related to leasable mineral resources in the Kemmerer Planning Area are briefly discussed in the following sections.

2.8.3.1 Coal

- Multiple mineral development conflicts (e.g., coal mining vs. coal bed methane); and
- Air quality standards.

2.8.3.2 Oil and Gas

- Disposal of produced water via surface water discharge permits (i.e., National Pollution Elimination Discharge System [NPDES] permits), underground injection permits, or by using evaporation ponds.

2.8.3.3 Trona

- Multiple mineral development conflicts.

2.8.3.4 Other Leasables

No issues related to other leasable minerals have been identified.

2.8.4 Management Opportunities

Opportunities for management of coal, oil and gas, trona, and other leasable minerals are briefly discussed in the following sections.

2.8.4.1 Coal

- Continue to keep the planning area open to exploration and leasing for coal.

2.8.4.2 Oil and Gas

- Strive to expeditiously process APDs; and
- Continue to keep the planning area open to exploration and oil and gas leasing.

2.8.4.3 Trona

- Continue to keep the lands in the Kemmerer Planning Area open to exploration and leasing of trona.

2.8.4.4 Other Leasables

- Continue to keep the lands in the Kemmerer Planning Area open to exploration and leasing for solid leasable minerals and geothermal resources.

2.9 Mineral Resources – Locatables

2.9.1 Overview

Potential locatable mineral deposits in the Kemmerer Planning Area include uranium, copper, titanium, vanadium, diamonds, bentonite, and fire clay. Locatable minerals are valuable mineral deposits that do not fall under the authority of the Mineral Leasing Acts and do not include common varieties of sand, stone, gravel, cinders, pumice, pumicite, and clay.

Exploration and mining of locatable mineral deposits in the planning area have occurred periodically. Patented phosphate claims, located prior to the Mineral Leasing Act of 1920, were once mined as part of the Leefe phosphate mine, located near the western edge of the planning area. Interstate Brick Company mined clay for about 35 years on mining claims located north of Evanston, Wyoming. Some of the claims were patented in 1991, and others were abandoned. Another area of patented claims is located on phosphate outcrops north of Cokeville, Wyoming. Prospecting and very limited mining activity occurred on the claims between 1900 and 1950.

A placer claim for building stone is currently being mined south of Kemmerer, and other building stone claims for diamonds and fire clay have also been staked in the last 10 years and have experienced some exploration activity.

2.9.2 Current Management Practices

Areas that are not withdrawn from claim location under the Mining Law of 1872 are available for the location of mining claims, which must be recorded

with the county and BLM. Exploration may be conducted under a Notice which is subject to review by BLM, while mining requires approval by BLM of a Plan of Operations. There is one active Plan of Operation and one active Notice in the planning area. No new claims may be filed in the Raymond Mountain WSA unless Congress determines that it should not be designated as Wilderness.

Changes in the regulations since the completion of the RMP require a Plan of Operation for all mining proposals. Current management consists of processing Notices for exploration proposals, and applications for Plans of Operations. There are currently no active Notices or applications for Notices, but there is one active Plan of Operation, and one proposed Plan of Operation in the Kemmerer Field Office.

2.9.3 Issues and Management Concerns

No issues related to locatable minerals have been identified.

2.9.4 Management Opportunities

A specific opportunity includes consideration of lifting existing withdrawals, where feasible, to allow new exploration and mining related to locatable minerals. Other opportunities may be identified during the scoping process.

2.10 Mineral Resources – Salables

2.10.1 Overview

The Kemmerer Planning Area contains various salable commodities including common sand and gravel, building stone (e.g., moss rock), limestone, shale, and decorative stone.

An active market has developed for moss rock (lichen-covered sandstone) that is primarily found on hogback ridges in the Overthrust Belt portion of the Kemmerer Planning Area. Moss rock is used for decorative stone, particularly in the Jackson, Wyoming area. Numerous BLM material sale permits are issued each year for moss rock.

Deposits of sand and gravel are generally found in the Kemmerer Field Office area in elevated terraces along streams and rivers. Currently, Lincoln and Uinta counties have permits for gravel pits in the Kemmerer Field Office for public road maintenance. Numerous older gravel pits occur throughout the area, many of which were originally issued to the Wyoming DOT. The Wyoming DOT also has current permits for gravel pits for use with Federal Aid Highway projects.

Some older geologic formations contain beds of conglomerate that are suitable for crushing and screening, such as the Hams Fork Conglomerate of the Evanston Formation. Building stone is found in many of the more resistant ridges, especially in the Overthrust Belt. Local sandstone from the Frontier Formation was historically used for buildings in Kemmerer.

BLM has two active community pits in the planning area: the Giraffe Creek pit in Salt Creek Canyon north of Cokeville, and the Dry Hollow pit west of Cokeville. Other talus deposits in the northwest portion of the Kemmerer Planning Area, including Nugget Sandstone talus in Pine Creek, have been utilized for roadwork.

2.10.2 Current Management Practices

Management of salable materials in the Kemmerer Planning Area must comply with the Material Sales Act of 1947, Mining and Mineral Policy Act of 1970, and all other relevant state and federal laws.

Salable mineral permit applications are processed on a case-by-case basis, with stipulations added to protect other resources. The current management practice is to issue exclusive use and non-exclusive disposals, including sales and free use permits, to access salable minerals.

2.10.3 Issues and Management Concerns

No issues have been identified related to the management of salable minerals.

2.10.4 Management Opportunities

Specific opportunities for management have not been identified to date; however, may be developed throughout the RMP revision process.

2.11 Paleontology

2.11.1 Overview

Paleontology is a biologic and geologic scientific discipline involving the study of fossil materials. Paleontological resources (fossils) include the body remains, traces, or imprints of plants and animals that have been preserved in the earth's crust during past geologic or prehistoric time.

Significant fossils are defined by BLM policy to include all vertebrate fossil remains (body and trace fossils) and those plant and invertebrate fossils determined to be scientifically unique on a case-by-case basis.

In the planning area, the most prolific vertebrate-bearing formations are the Bridger, Green River, Wasatch, and Evanston formations. The Bridger Formation has produced at least 25 families of fossil Eocene mammals, and is world-renowned among paleontologists. Invertebrate and plant localities are numerous, and include fossil mollusks, leaves, algae, pollen, spores, and insects. The Green River

Formation of Eocene age contains a spectacular assemblage of vertebrate and invertebrate fossils. Fossil Butte National Monument, administered by the National Park Service and located about 10 miles west of Kemmerer, was created in 1974 to preserve, display, and interpret paleontological resources of the Green River and Wasatch Formations. The degree of preservation of intricate structures in the Green River Formation specimens is duplicated in only a few other areas of the world (BLM 1985). The Evanston Formation straddles the Cretaceous/Paleocene boundary, which is considered significant in terms of possible mass extinctions, and the formation contains an extensive collection of Paleocene mammals. The Wasatch Formation of Eocene age also contains extensive mammal remains.

A classification scale, termed the Potential Fossil Yield Classification, has been developed to estimate the potential for discovering significant fossils during any surface-disturbing activity in specific geologic formations. Based on specific geologic formations, the scale uses a ranking of 1 through 5, with Class 5 being assigned to high potential units.

2.11.2 Current Management Practices

Collection of fossils from public lands is allowed with some restrictions, depending on the significance of the fossils. Under existing regulations, hobby collection of common invertebrate or plant fossils by the public is allowed in reasonable quantities using hand tools. Current regulations do not allow any commercial collecting of paleontological resources. The public is allowed to collect petrified wood without a permit for personal, noncommercial purposes. They can collect up to 25 pounds plus one piece per person per day, with a maximum of 250 pounds in one calendar year.

Collection of significant fossils, which include all vertebrate and any designated plant or invertebrate fossils, can only be done under authority of permits issued. Two types of permits are issued. The basic permit is the survey and limited collection permit, issued for reconnaissance work and collection of surface finds, with a one square meter limit of surface disturbance. If the work will exceed one square meter, or requires mechanized equipment, the researcher must apply for an excavation permit. Prior to authorization of an excavation permit, the BLM must prepare an environmental assessment of the proposed location. All fossils collected under a permit remain public property and must be placed in an approved repository. Yearly reports of findings including locality and specimen information are required to be submitted to the BLM.

2.11.3 Management Concerns and Issues

The following issues have the potential to affect paleontological resources:

- Oil and gas exploration and development;

- Coalbed methane development;
- Other mineral development (leasable, locatable, and salable);
- Rights-of-way; and
- Land tenure adjustments.

2.11.4 Management Opportunities

Paleontological resources are managed for the overall benefit of the public, which may include research, preservation, interpretation and museum display, and recreation. The following management opportunities include:

- Identify paleontological resources, implement proper mitigation measures, and characterize overall sensitivity to the fragility and rarity of the resource to maximize preservation efforts.
- Consider development of recreation opportunities, which include hobby collecting of fossils and on-site interpretation and development.
- Consider on-site interpretation and development of localities.

2.12 Rangeland Management

2.12.1 Overview

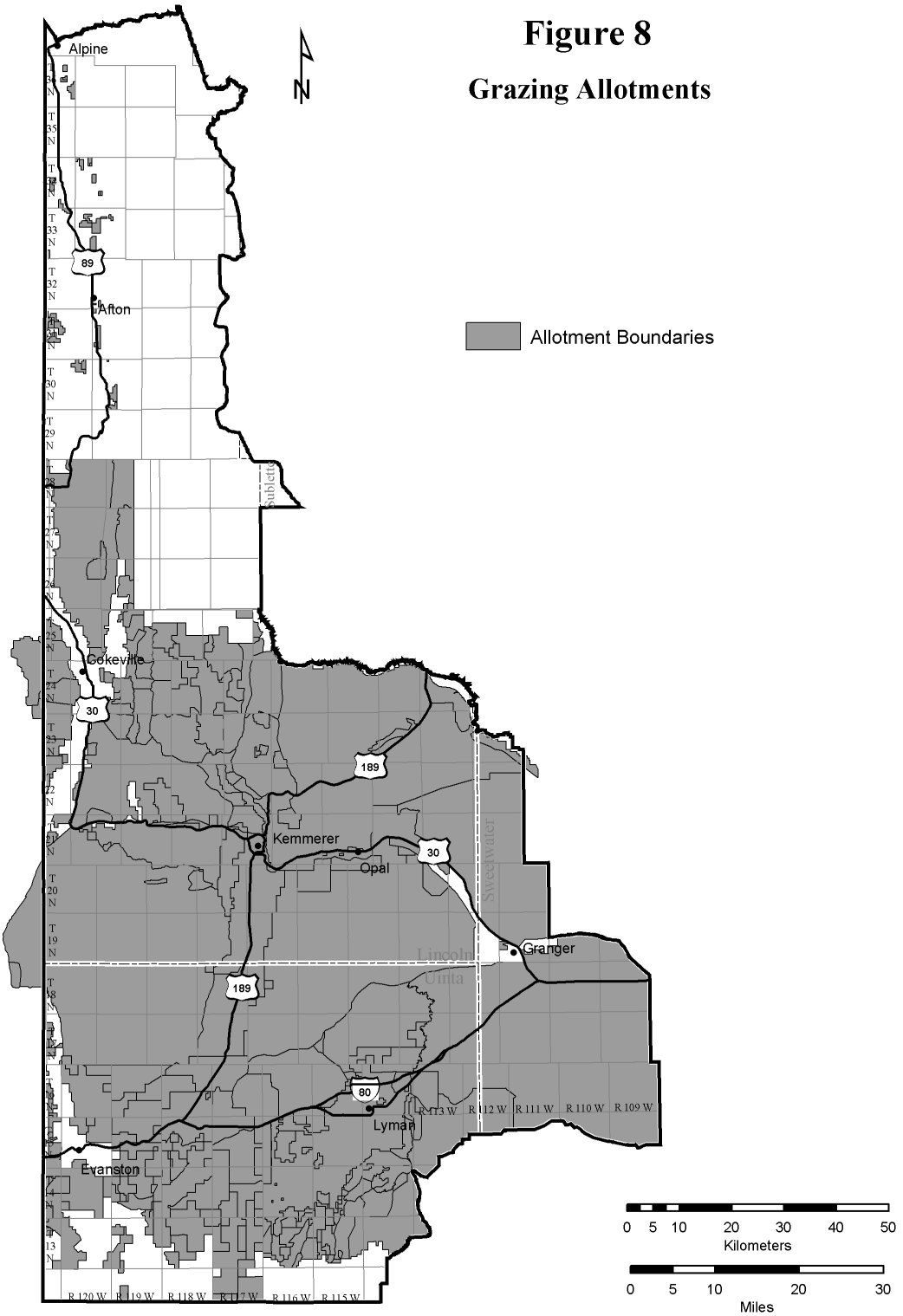
The Kemmerer Field Office administers grazing on 204 allotments ranging in size from 10 acres to 522,245 acres and accounts for a total of 157,249 animal unit months (AUMs) across all allotments (Figure 8). These allotments occur within the former Pioneer Trails and Star Valley Planning Units and include allotments that cross the Wyoming state line into Utah and Idaho. A total of 250 permittees and lessees use these allotments. Livestock that graze within lands administered by the Kemmerer Field Office consists of cattle, sheep, and horses, of which cattle account for 97,190 AUMs, sheep account for 59,505 AUMs, and horses account for 554 AUMs. Cattle are grazed on 143 allotments, sheep are grazed on 25 allotments, 36 allotments are grazed by both cattle and sheep. Eight of these allotments are also utilized by horses.

The BLM manages domestic livestock in accordance with the *Wyoming Standards for Healthy Rangelands and Guidelines for Livestock Grazing Management*, August 12, 1997. The standards are used to enhance sustainable livestock grazing and wildlife habitat while protecting watersheds and riparian ecosystems. Allotment specific appropriate actions are being implemented to improve rangeland conditions in areas not meeting standards.

Three allotments have grazing associations and 18 allotments have Coordinated Resource Management. Eighteen additional allotments have Allotment Management Plans, and five allotments have implemented informal grazing systems.

Figure 8

Grazing Allotments



Livestock grazing is part of the multiple use management supported by the County General Plans of Sweetwater, Uinta, and Lincoln counties within the Kemmerer Planning Area.

2.12.2 Current Management Practices

Livestock grazing is managed primarily in designated livestock allotments. Legislative acts, federal policies, and other policies specify the Kemmerer Field Office's authorization and management of livestock grazing on public lands. In 1985, BLM established 3 categories for allotments to identify areas where management was potentially needed. At that time all allotments were classified as one of the following: Improve Existing Resource Conditions (I), Maintain Existing Resource Conditions (M), or Custodial Management (C). The final designation of an allotment into one of these 3 categories is based on range condition, resource potential, present management situation, riparian areas, resource conflicts, and economic potential. Within the Kemmerer Planning Area rangeland health assessments have been accomplished on 49 allotments. Rangeland health assessments on the remaining 155 allotments will be completed by 2010.

Currently, 1,031,150 acres (39 allotments) have an overall 'I' designation, 352,939 acres (118 allotments) have an 'M' designation, and 48,754 acres (71 allotments) have a 'C' designation.

2.12.3 Issues and Management Concerns

BLM will continue to manage rangelands in accordance with Standards for Healthy Rangelands. Within the planning area rangeland management issues and concerns exist on some allotments and include:

- Riparian areas;
- Livestock distribution;
- Livestock control;
- Season of use;
- Vegetation composition diversity and age-class diversity;
- Stocking rate;
- Trailing;
- Water development;
- Livestock grazing conflicts related to recreation, wildlife, and other uses;
- Multiple allotment ownership/management;
- Noxious weeds;
- Unauthorized use in some allotments;
- Grass banks;
- Forage allocations; and
- Fencing of private land within grazing allotments.

2.12.4 Management Opportunities

Preliminary rangeland management opportunities for allotments within the Kemmerer Planning Area include:

- Continue to improve livestock distribution through water development, salt blocks, fencing, and land treatments.
- Revise stocking rates.
- Combine or divide allotments as necessary.
- Enhance forage conditions through vegetation manipulation.
- Continue to develop and implement AMPs and Coordinated Resource Management Plans.
- Continue coordination with WGFD on herd objective numbers.

2.13 Recreation

This section includes a discussion of recreation and off-highway vehicle (OHV) use.

2.13.1 Overview

2.13.1.1 Recreation

Outdoor recreation is recognized as an important land use providing social and economical benefits on national, regional and local levels, and is more and more frequently being considered the dominant use on many public lands (Driver et al. 2000). The BLM provides opportunities for outdoor recreation and nature-based tourism under the concept of multi-use management. Recreational activities occurring on public lands are multi-faceted and generally considered as non-consumptive. Federal lands within the Kemmerer Field Office provide a broad spectrum of outdoor opportunities affording visitors the freedom of recreational choice with minimal regulatory constraints.

Several BLM and non-BLM administered developed recreation sites in the Kemmerer Planning Area concentrate visitor use. They are:

- Pine Creek Recreation Area
- Wyoming Range Snowmobile Trail System
- Fontenelle Recreation Area
- Fossil Butte National Monument
- Lake Viva Naughton
- Bridger-Teton National Forest
- Wasatch National Forest

Dispersed recreation uses on BLM-administered lands includes, but is not limited to, sight-seeing, touring, hiking, mountain biking, OHV use, photography, wildlife viewing, camping, fishing, and hunting (with the latter two categories accounting for the majority of visitor days). Additional recreation activities in the Kemmerer Field Office include rock and mineral collecting, boating,

paddling, downhill and cross-country skiing, and snowmobiling. Recreational opportunities are offered to the public on all BLM administered lands within the Kemmerer Field Office where legal access is available.

In addition to managing lands for general dispersed recreation activities, BLM also administers a number of Special Recreational Permits for specific nonexclusive commercial or competitive recreational activities authorized by the Land and Water Conservation Fund. These permits are issued as a means to manage visitor use, protect natural and cultural resources, and provide a mechanism to accommodate commercial recreational uses. The six general categories are commercial, competitive, vending, individual or group use in special areas, organized group activity and event use (BLM 1995). The Kemmerer Field Office currently administers eight hunting Special Recreation Permits for commercial outfitters.

2.13.1.2 Off-Highway Vehicles

The national objectives for management of OHV are to protect the resources of public lands, to promote the safety of all users of those lands, and to minimize conflicts among the various uses of those lands.

OHVs are defined as "any motorized vehicle capable of or designated for, travel on or immediately over land, water, or other terrain."

To meet national objectives, each federal agency is required to designate areas and trails for OHV use or restriction. Area and trail designations are completed during the RMP planning process in accordance with BLM regulations (43 CFR 8340) and are limited to the following three management categories:

Open: Areas used for intensive OHV use where there are no compelling resource needs, user conflicts, or public safety issues to warrant limiting cross-country travel.

Limited: Areas or trails where the BLM must restrict OHV use in order to meet specific resource management objectives. These limitations may include: limiting the time, number or types of vehicles, limiting the time or season of use, permitted, licensed use only, limiting to existing roads and trails, and limiting use to designated roads and trails. The BLM may place additional limitations, as necessary, to protect other resources, particularly in areas that OHV enthusiasts used intensely or where they participate in competitive events.

Closed: This designation is used if closure to all vehicular use is necessary to protect resources, ensure visitor safety, or reduce conflicts.

2.13.2 Current Management Practices

2.13.2.1 Recreation

The RMP allows for dispersed recreation throughout the planning area with minimal regulatory constraint. Management guidelines include:

- Enhance, develop, maintain, and protect the undeveloped recreational resources in the Kemmerer Planning Area;
- Preserve and protect the natural scenic values of the Kemmerer Planning Area;
- Provide opportunity for legitimate public OHV use; and
- Protect sensitive environmental, recreational, and cultural values while providing for a variety of OHV settings and recreational opportunities.

Monitoring and enforcement of dispersed recreation is limited, especially in areas with a small percentage of public lands or limited access. The BLM is dependent upon cooperation from public land users and other federal and state agencies for the successful management of these areas. Complaints are handled on a case-by-case basis.

2.13.2.2 Off-Highway Vehicles

The majority (1.4 million acres) of the Kemmerer Planning Area is designated as limited for OHV use. This designation was created to allow OHV use without increasing the number of acres disturbed. Recreational users are not permitted to travel off of roads and trails except during the performance of necessary tasks such as the retrieval of game.

The planning area is generally open to snowmobiling in the winter months. However, big game winter ranges may be closed to minimize stress to wintering animals. Closures vary depending on conditions and are determined through coordination with the WGFD. The Viva Naughton Trailhead provides access to 343 miles of groomed trails in the Wyoming range.

2.13.3 Issues and Management Concerns

2.13.3.1 Recreation

Multiple use management gives rise to a number of issues and management concerns:

- Environmental consequences of high levels of recreation use;

- Conflicts between and among public land users and permit holders;
- Balancing differing and/or opposing uses on public lands;
- Insufficient limitations on and guidance for SRV permittees;
- Illegal/non-permitted outfitting on public lands;
- Access to public lands;
- Safety and information on public lands;
- Protection of natural resources;
- Loss of critical wildlife habitats;
- Segregation of wildlife seasonal ranges;
- Damage to important riparian areas and sensitive soils;
- Recreational user satisfaction;
- Visual intrusions affecting landscapes; and
- Loss of cultural and historic resources.

2.13.3.2 Off-Highway Vehicles

OHV issues and management concerns include:

- Snowmobiling opportunities;
- Public land signage;
- Off-road travel; and
- Trespassing onto private lands.

2.13.4 Management Opportunities

2.13.4.1 Recreation

Recreation opportunities for management include:

- Designate a Special Recreation Management Area (SRMA) for the Pine Creek area.
- Develop and designate a Scenic Backcountry Byway near Fossil Butte National Monument.
- Develop and implement management plans for all SRMAs using management prescriptions developed in the RMP.

- Identify and designate additional developed recreation sites.
- Conduct suitability studies of rivers eligible for wild and scenic river designation.
- Analyze all other rivers in the resource area as to eligibility and classification for wild and scenic river designation.
- Designate all of the planning area as open, limited, or closed to off-highway vehicle use.

2.13.4.2 Off-Highway Vehicles

Opportunities for management of OHVs include:

- Reexamine existing OHV designations pursuant to BLM guidance and policy.
- Consider areas where resource conflicts with OHV use may occur (e.g., OHV use in crucial winter range and in culturally sensitive properties).
- Consider development of transportation plans.

2.14 Socioeconomic Conditions

The organization and type of information included in this section differs from other revision topics. Information described in this section is summarized from Sonoran Institute (2003) data (www.sonoran.org). Information includes a summary of population, income, employment, ethnic diversity, and environmental justice (Executive Order 19898).

2.14.1 Overview

The primary topics and issues represented in the Socioeconomics section include population, income, employment/unemployment and ethnic diversity, including the topic of environmental justice (Executive Order 19898).

The three counties in the Kemmerer Planning Area are Lincoln, Uinta, and Sweetwater. Sweetwater is the most populous with 37,475 people in 2000. Lincoln County comprised 14,630 people in 2000, while Uinta comprised 19,707. All three counties experienced a net rise in population between 1970 and 2000, but Sweetwater has had a declining population from about 1995 to 2000. Uinta's population over the same period has remained the same or declined slightly. Population in Lincoln County has increased steadily since about 1989 (Sonoran Institute 2003a, 2003b, 2003c).

In 2000, per capita personal income in 2000 was greatest in Sweetwater County ($29,125); per capita personal income was $20,980 in Lincoln; and $22,042 in Uinta. The state average per capita was $27,941. From 1990 to 2000, per capita personal income grew in real terms (i.e., accounting for inflation) in all three counties; the gain was largest in Sweetwater (22 percent) and smallest in Lincoln (10 percent) (Sonoran Institute 2003a, 2003b, 2003c). Table 3 provides a summary of the sources of personal income by county in 2000. The largest component of personal income in Lincoln and Sweetwater Counties was non-labor income, including transfer payments (e.g., retirement, disability, insurance payments, Medicare, and welfare) as well as dividends, interest, and rent. In each of these counties, about two-thirds of non-labor income was from dividends, interest, and rent. Income from the services and professional sector was the largest contributor to personal income in Uinta County, with non-labor income a close second. Income from the services and professional sector was the second largest component of personal income in Lincoln and Sweetwater Counties. Mining contributed a substantial portion of personal income in all three counties, especially Sweetwater. Government also contributed a substantial portion of personal income in all counties. Farming and agricultural services contributed relatively little of personal income in all three counties (Sonoran Institute 2003a, 2003b, 2003c).

Table 3. Sources of Personal Income, 2000[1]

Source	Lincoln	Uinta	Sweetwater
Farm and Agricultural Services	1.3%	0.2%	0.2%
Mining	8.7%	11.8%	25.0%
Manufacturing (including forest products)	4.7%	2.9%	9.8%
Services and Professional	24.3%	29.0%	28.3%
Construction	8.0%	6.3%	5.3%
Government	14.2%	14.0%	12.0%
Non-Labor Income[2]	43.1%	28.5%	29.2%
Total Personal Income ($ millions)	$307	$434	$1,091

Notes: 1. Percentages may not add to 100% because of adjustments made for place of residence and personal contributions for social insurance.
2. Non-labor income includes transfer payments (retirement, disability, insurance, Medicare, welfare) as well as dividends, interest, and rent.

Source: Sonoran Institute 2003a, 2003b, 2003c.

Table 4 shows the average earnings per job by county, state, and nation. Average earnings per job in Lincoln and Uinta Counties in 2000 were substantially lower than the state and national average and substantially higher than the state average. Average earnings per job in Sweetwater were about the same as the national average.

Table 4. Average Earnings Per Job (2000)

Locality	Average Earnings Per Job
Lincoln County	$23,145
Uinta County	$24,595
Sweetwater County	$36,048
Wyoming	$27,037
United States	$36,316

Source: Sonoran Institute 2003a, 2003b, 2003c.

Two of the counties in the Kemmerer Planning Area had unemployment rates in 2001 that were higher than the national average of 4.8 percent. Lincoln had an unemployment rate of 5.4 percent and Uinta had a rate of 5.0 percent. The unemployment rate in Sweetwater (4.6 percent) was almost the same as the national average. Unemployment in all three counties was higher than the state rate of 3.9 percent (Sonoran Institute 2003a, 2003b, 2003c).

Table 5 provides a summary of population by race and ethnicity in 2000. All three counties in the planning area are predominantly white and non-Hispanic. Lincoln and Uinta also have a smaller proportion of nonwhite residents and a smaller proportion of Hispanics than the state overall.

Table 5. Racial and Ethnic Groups by Counties (2000)[1]

Race or Ethnicity	Lincoln	Uinta	Sweetwater	State
White	97.1%	94.3%	91.6%	92.1%
Black or African American	0.1%	0.1%	0.7%	0.8%
American Indian or Alaska Native	0.6%	0.9%	1.0%	2.3%
Asian, Native Hawaiian, or Pacific Islander	0.3%	0.4%	0.6%	0.7%
Some other race	0.7%	2.9%	3.6%	2.5%
Two or more races	1.2%	1.5%	2.4%	1.8%
Hispanic or Latino (of any race)[2]	2.2%	5.3%	9.4%	6.4%
Not Hispanic or Latino[2]	97.8%	94.7%	90.6%	93.6%

Notes: 1. Detail may not add to 100 percent due to rounding.
2. Hispanic/Latino breakout is separate because Hispanics/Latinos can be of any race.
Source: Sonoran Institute 2003a, 2003b, 2003c.

The median age in Lincoln County in 2000 was slightly higher than the national median of 35.3 years, and in Sweetwater and Uinta Counties was lower. The median age represents the age for which 50 percent of the residents are older and 50 percent are younger. The median age was 36.8

years in Lincoln County, 31.4 in Uinta, and 34.2 in Sweetwater (Sonoran Institute 2003a, 2003b, 2003c).

Executive Order 12898, enacted in 1993, requires that each federal agency make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority and low-income populations. The BLM's activities do not disproportionately affect minority nor low income populations residing in Lincoln, Sweetwater, or Uinta counties.

2.15 Soil

2.15.1 Overview

Soils of the Kemmerer Planning Area were formed from a variety of parent materials that developed under unique geomorphic and geologic circumstances. The soils in the planning area can be classified into the five groups summarized below.

Overthrust Belt – Red and brown colors of varying depths and textures characterize the soils on the ridges and steep slopes of the Overthrust area. Most red soils in this area are highly susceptible to water erosion when disturbed.

Green River Basin Uplands – Low relief, bedrock ridges, erodable slopes, and alluvial fans dominate the broken landscape in this area. These soils generally have a clay-like texture. Poor infiltration and high levels of runoff create a strong potential for water erosion in this area.

Mountainous Areas – Soils in mountainous areas are located in the northern and southern parts of the Kemmerer Planning Area. Parent materials include sedimentary rocks and glacial till resulting in soils of various textures with various rock sizes. Landslides and slumping occur on the steeper, moister slopes.

Relict Alluvial Fans and High Outwash Terraces – This group occurs in the extreme southcentral and northwest part of the Kemmerer Planning Area and is found on alluvial terraces, fans, and pediments. These landforms were created as a result of alluvial material flushing out of the canyons of nearby mountains.

Floodplains – Floodplain soils form a small minority of the soils within the planning area. However, because of their riparian location and productivity, they form an important part of the overall ecosystem.

Soils in the Kemmerer Planning Area are vulnerable to a variety of natural and human-induced impacts. Soil erosion and soil compaction are the result

of various human impacts including soil compaction by livestock and vehicles, runoff from roads, and surface-disturbing activities. In addition, erosion can be caused by the frequent high velocity and sustained winds in the planning area.

2.15.2 Current Management Practices

Protection of soil resources is accomplished through the application of use restrictions, or preferred management practices, intended to limit soil erosion or loss of soil productivity. Some restrictions may be general, programmatic stipulations, which are applied to all surface-disturbing activities such as limitations on surface-disturbing activities during periods of wet or frozen soils, or limitations on operations on slopes greater than a certain percent. Typically, however, protection of soil resources is accomplished through the application of site specific management techniques such as establishing specific OHV use areas, controlling surface runoff, and avoiding disturbance during wet or frozen soils.

2.15.3 Issues and Management Concerns

No soil-related issues have been identified to date.

2.15.4 Management Opportunities

Preliminary opportunities include:

- Consider ways to improve reclamation of surface-disturbed areas.
- Continue to focus management on maintaining soil integrity, successful reclamation, reducing erosion, and in some cases improving soil health through implementation of grazing management plans.

2.16 Special Management Areas

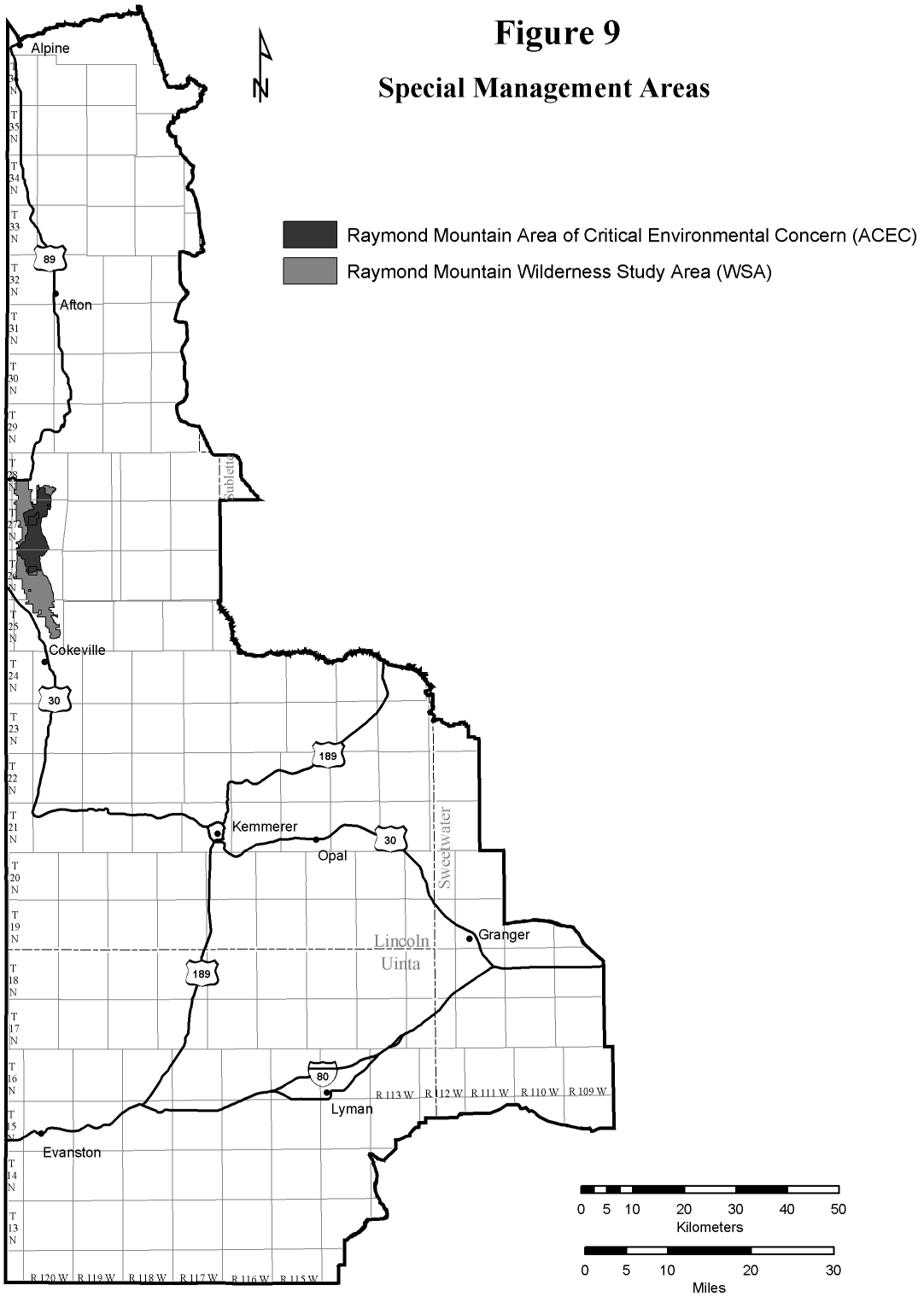
2.16.1 Overview

Special Management Areas (SMAs) are designated by the BLM to protect or preserve certain qualities of or uses in specific areas. The environment in these areas is unique in some regard, so that it is desirable to apply different management to the areas than is applied to the surrounding public lands. The Kemmerer Field Office currently manages two SMAs pursuant to applicable federal regulations and guidelines (Figure 9).

Raymond Mountain WSA: Under the FLPMA, Congress directed the BLM to inventory, study and recommend public lands under its administration to be designated wilderness. The Interior Board of Land Appeals recognized the Raymond Mountain WSA, located in the Sublette

Figure 9

Special Management Areas



Mountain range in the planning area, as a qualifying WSA in 1981. The WSA is approximately 19 miles long and 4 miles wide at the widest point and is characterized by diverse vegetation and steep topography. Several creeks run through the WSA, two of which contain a pure strain of Bonneville cutthroat trout (*salmo clarki utah*). The area is also important crucial winter range for elk, moose, and mule deer. Activities allowed in the WSA include hunting, fishing, travel with motorized vehicles on existing routes, camping, hiking, horseback riding, and livestock grazing.

Raymond Mountain Area of Critical Environmental Concern (ACEC): Pursuant to FLPMA, BLM is mandated to designate and protect ACECs where special management attention is required in order to: protect and prevent irreparable damage to important historic, cultural, or scenic values; protect and prevent irreparable damage to fish and wildlife resources or other natural systems or processes; or to protect life and safety from natural hazards. The Raymond Mountain ACEC, designated in 1982, lies wholly within the Raymond Mountain WSA in the Kemmerer Planning Area. The ACEC is managed to protect the needs of the Sensitive Bonneville Cutthroat trout.

Wild and Scenic Rivers: Two waterway segments within the planning area have been found suitable for Wild and Scenic River designation (Huff Creek and Raymond Creek), both of which also fall within the Raymond Mountain WSA.

The Wild and Scenic Rivers Act of 1968 provides for the protection of certain free-flowing rivers and immediate environments that possess outstandingly remarkable values.

2.16.2 Current Management Practices

SMAs administered by the Kemmerer Field Office are managed under a combination of BLM and FLPMA regulations and guidelines to preserve and protect the significant resources for which they were designated.

Management actions in the Raymond Mountain WSA include reduction in livestock numbers, adjustments in grazing distribution patterns, fencing, herding, and livestock conversions. To control OHV use, barriers were installed in Raymond Canyon. In addition to the general management actions, there are five primary provisions of FLPMA with regard to interim management of WSAs:

1. WSAs must be managed so as not to impair their suitability for preservation as wilderness.

2. Activities that are permitted in WSAs must be temporary uses that create no new surface disturbance, nor involve permanent placement of structures.

3. Grazing, mining, and mineral leasing uses that existed on October 21, 1976 may continue in the same manner and degree as on that date, even if this would impair wilderness suitability of the WSAs.

4. WSAs may not be closed to appropriation under the mining laws in order to preserve their wilderness character.

5. Valid existing rights must be recognized.

In addition to the management prescriptions specified for the WSA, priority for riparian management has been given the Raymond Mountain ACEC.

2.16.3 Issues and Management Concerns

An issue related to SMAs is the well being of existing areas of special concern that remain unprotected.

2.16.4 Management Opportunities

The following are several opportunities for management of SMAs:

- Develop a plan (including a Fire Management Plan) for protecting or increasing the numbers of Bonneville cutthroat trout.
- Pursuant to BLM Manual 1613 (BLM 1988a), analyze areas where significant resource values are threatened for ACEC designation.
- Analyze Huff and Raymond Creeks as Wild and Scenic Rivers. Should the two rivers be designated, develop comprehensive management plans.

2.17 Special Status Species

2.17.1 Overview

Wyoming BLM policy goals regarding special status species (BLM 2002) are to:

- Maintain vulnerable species and habitat components in functional BLM ecosystems.
- Ensure special status species are considered in land management decisions.
- Prevent a need for species listing under the Endangered Species Act (ESA).
- Prioritize needed conservation work with an emphasis on habitat.

Special status species are defined as those species currently listed as threatened or endangered under the Endangered Species Act (ESA), as well as species that are proposed or candidates for listing. It also includes species designated as sensitive by the BLM state director or state government. There is increasingly more interest and controversy surrounding management of threatened, endangered, and sensitive species. More emphasis is being placed on maintaining species diversity and keeping native ecosystems healthy to keep other species from becoming listed.

BLM Manual 6840 provides Policy and Guidance for Special Status Species Management (BLM 1988b). BLM Wyoming Sensitive Species Policy and List are provided in an annually updated memorandum (BLM 2002). By definition, sensitive species "could easily become endangered or extinct in the state" (BLM 2002). This includes species whose numbers are declining so rapidly that federal listing may become necessary; with typically small or widely dispersed populations; or those inhabiting ecological refugia or other specialized or unique habitats (BLM 2002).

The State of Wyoming does not maintain a list of sensitive species, but the Wyoming Natural Diversity Database (WYNDD) tracks, studies, and documents special status species in Wyoming, as well as species that may become rare due to environmental disturbance. The abundance and vulnerability status of rare species on the WYNDD list are considered during annual revision of the BLM special status species list.

Within the Kemmerer Planning Area, there are 2 bird, 3 mammal, 4 fish, and 1 plant species that have been designated as listed, proposed for listing, or are identified as candidate species as per the ESA.

2.17.1.1 Animals

Aquatic

Three endangered fish species (Colorado pikeminnow, bonytail chub, and razorback sucker) have not existed in Wyoming since the impoundment of Flaming Gorge Dam in 1963 and the Humpback Chub has only inhabited the downstream tributaries of the Colorado and Green Rivers. They are; however, considered in planning projects because of the management implications that they present under the ESA.

In addition to listed species, seven species have been designated as 'Sensitive' by BLM, the State of Wyoming, and the WYNDD (Table 6). These species have been recognized as in need of special management attention due to reduced or declining populations and habitat (BLM 2002).

Table 6. Special Status Fish Species

Species	Status[1]
Colorado pikeminnow	Endangered
Bonytail chub	Endangered
Razorback sucker	Endangered
Humpback chub	Endangered
Bonneville cutthroat trout	Sensitive (Game Fish)
Colorado River cutthroat trout	Sensitive (Game Fish)
Snake River (or fine-spotted) cutthroat trout	Sensitive (Game Fish)
Roundtail chub	Sensitive (Non-game Fish)
Leatherside chub	Sensitive (Non-game Fish)
Bluehead sucker	Sensitive (Non-game Fish)
Flannelmouth sucker	Sensitive (Non-game Fish)

Note: 1. Sensitive = BLM Sensitive Species; Threatened, Endangered, Proposed, Candidate = Status in accordance with the ESA.
Sources: BLM 2002; USFWS 2003.

Terrestrial

Numerous high priority special status species occur or have potential to occur in the Kemmerer Planning Area (Table 7). The list includes four wildlife species listed as either Endangered or Threatened under the ESA and 22 species designated by Wyoming BLM as sensitive. The gray wolf is listed under the ESA as an experimental, nonessential population. The mountain plover was withdrawn from consideration for listing under the ESA in September 2003, but retains status as a BLM sensitive species in Wyoming. The yellow-billed cuckoo is a candidate for listing under ESA as well as a BLM sensitive species.

Table 7. Special Status Animal Species

Species	Status[1]
Black-footed ferret	Endangered
Canada lynx	Threatened
Grizzly bear	Threatened
Bald eagle	Threatened
Gray wolf	Experimental
Yellow-billed cuckoo	Candidate, Sensitive
Mountain plover	Sensitive
Long-eared myotis	Sensitive
Pygmy rabbit	Sensitive
White-tailed prairie dog	Sensitive
Idaho pocket gopher	Sensitive
White-faced ibis	Sensitive
Trumpeter swan	Sensitive
Northern goshawk	Sensitive
Ferruginous hawk	Sensitive
Peregrine falcon	Sensitive
Greater sage-grouse	Sensitive
Long-billed curlew	Sensitive
Burrowing owl	Sensitive
Sage thrasher	Sensitive
Loggerhead shrike	Sensitive
Brewer's sparrow	Sensitive
Sage sparrow	Sensitive
Northern leopard frog	Sensitive
Great Basin spadefoot	Sensitive
Boreal toad	Sensitive
Spotted frog	Sensitive

Note 1. Sensitive = BLM Sensitive Species; Threatened, Endangered, Proposed, Candidate= Status in accordance with the ESA.
Sources: BLM 2002; USFWS 2003.

2.17.1.2 Plants

The Kemmerer Field Office has the specific goals of contributing to the recovery of species currently listed under the ESA and to promoting the recovery and conservation of all special status plant species within the Planning Area (Glennon 2003).

Special status plant species that occur or have habitat available in the Kemmerer Planning Area are listed in Table 8. The list includes one of the four plant species within Wyoming listed as either Endangered or Threatened under the ESA and eight species designated by Wyoming BLM as sensitive.

Seventeen species considered rare by WYNDD and documented to occur within the Planning Area are also listed.

Table 8. Special Status Plant Species (Page 1 of 2)

Species	Common Name	Rank[1]
Achnatherum swallenii	Swallen mountain-ricegrass	G5/S2
Astragalus bisulcatus var. *haydenianus*	Hayden's milkvetch	G5T5/S2
Astragalus coltonii var moabensis	Moab milkvetch	G5T3/S2
Astragalus lentiginosus var. *salinus*	Sodaville milkvetch	G5T5/S2
Astragalus racemosus var. *treleasei*	Trelease's racemose milkvetch	BLM sensitive, G5T2/S1
Atriplex falcata	Sickle saltbush	G5/S1
Chamaechaenactis scaposa	Fullstem	G5/S1-2
Downingia laeta	Great Basin downingia	G5/S1
Eriogonum divaricatum	Divergent wild buckwheat	G5/S1
Lathyrus lanszwertii var. *lanszwertii*	Nevada sweetpea	G5T5/S1
Lepidium integrifolium var. *integrifolium*	Entire-leaved peppergrass	BLM sensitive, G2T1/S1
Lesquerella macrocarpa	Large-fruited bladderpod	BLM sensitive, G2/S2
Lesquerella multiceps	Western bladderpod	BLM sensitive, G3/S1
Lesquerella parvula	Narrow-leaved bladderpod	G5T3/S1
Lesquerella prostrata	Prostrate bladderpod	BLM sensitive, G3/S1
Opuntia polyacantha var. *juniperina*	Juniper prickly-pear	G5T3/S1
Opuntia polyacantha var*, rufispina*	Rufous-spine prickly-pear	G5T5/S2
Penstemon scariosus var. *garrettii*	Garrett's beardtongue	G5T3/S1
Phacelia glandulosa var. *deserta*	Desert glandular phacelia	G5T1-2/S1
Phlox albomarginata	White-margined phlox	G5/S1
Phlox pungens	Beaver Rim phlox	BLM sensitive, G2/S2
Physaria condensata	Tufted twinpod	BLM sensitive, G2/S2

Table 8. Special Status Plant Species (Page 2 of 2)

Species	Common Name	Rank[1]
Physaria dornii	Dorn's twinpod	BLM sensitive, G1/S1
Potentilla multisecta	Deep creek cinquefoil	G3-4/S1
Silene douglasii	Douglas' campion	G5/S1
Spiranthes diluvialis	Ute ladies' tresses	federally threatened

Note: 1. WYNDD uses a standardized ranking system developed by The Nature Conservancy's Natural Heritage Network to assess the global and statewide conservation status of each plant and animal species, subspecies, and variety. Each taxon is ranked on a scale of 1-5, from highest conservation concern to lowest. Codes are as follows:

G Global rank: Rank refers to the rangewide status of a species.
T Trinomial rank: Rank refers to the rangewide status of a subspecies or variety.
S State rank: Rank refers to the status of the taxon (species or subspecies) in Wyoming. State ranks differ from state to state.

1 Critically imperiled because of extreme rarity (often known from 5 or fewer extant occurrences or very few remaining individuals) or because some factor of a species' life history makes it vulnerable to extinction.

2 Imperiled because of rarity (often known from 6 to 20 occurrences) or because of factors demonstrably making a species vulnerable to extinction.

3 Rare or local throughout its range or found locally in a restricted range (usually known from 21 to 100 occurrences).

4 Apparently secure, although the species may be quite rare in parts of its range, especially at the periphery.

5 Demonstrably secure, although the species may be rare in parts of its range, especially at the periphery.

2.17.2 Current Management Practices

2.17.2.1 Animals

Aquatic

Water depletion, or the removal of surface water from the tributaries to the Colorado River system, is considered by United States Fish and Wildlife Service (USFWS) to jeopardize the continued existence of the endangered fish species downstream from the Planning Area, including Colorado pikeminnow, bonytail chub, and razorback sucker. The recovery program for these species requires payment of a depletion fee to help support the recovery program for any project expected to result in water depletion.

Terrestrial

BLM Manual 6840 provides Policy and Guidance for Special Status Species Management. The goals of BLM Wyoming policy regarding Special Status Species (BLM 2002) are to:

- Maintain vulnerable species and habitat components in functional BLM ecosystems.
- Ensure that special status species are considered in land management decisions.
- Prevent a need for additional species listing under the ESA.
- Prioritize needed conservation work with an emphasis on habitat.

The Kemmerer Field Office has the specific goals of contributing to the recovery of species currently listed under the ESA and to promote the recovery and conservation of all special status species within the Planning Area. Formal consultation is required on any action proposed by a federal agency that may adversely affect a federally listed species or will result in jeopardy or adverse modification of critical habitat. Determination of adverse impact or lack of adverse impact to the species or its habitat is made in consultation with the USFWS.

The USFWS has approved recovery plans for the bald eagle, gray wolf, black-footed ferret, and grizzly bear, as well as several plant and fish species. Recovery plans identify a strategy that, when implemented, will lead to the recovery of the species. BLM management plans must conform to the management strategy, goals, and objectives of the various recovery plans.

The BLM Wyoming State Office is currently developing programmatic Biological Assessments (BA) for all listed species throughout the state. In the absence of a specific recovery plan, the BA will provide a management strategy and guidelines to protect listed species. Further, the BA will identify threats and appropriate conservation measures to reduce impacts on listed species.

2.17.2.2 Plants

Consultation is required on any action that a Federal Agency proposes that (1) may adversely affect a federally listed species, or (2) will result in jeopardy or adverse modification of critical habitat. Determination of adverse impact or lack of adverse impact to the species or its habitat is made in consultation with the USFWS or the National Marine Fisheries Service (NMFS). A recovery plan for Ute ladies' tresses, *Spiranthes diluvialis*, the only federally listed species potentially occurring in the Kemmerer Planning Area, is available to aid in management of the species and its habitats.

No management actions are permitted on BLM lands that would jeopardize the continued existence of species federally listed, proposed for listing or candidates for listing. The Kemmerer Field Office requires surveys of all areas of suitable habitat for Ute ladies' tresses prior to engaging in surface-

disturbing activities. Appropriate measures to protect all special status species are applied to agency actions and use authorizations. These measures could include avoidance or use restrictions (e.g., no surface occupancy, no surface disturbance, and seasonal restrictions). Currently, a no surface occupancy restriction applies to four populations of Dorn's twinpod, *Physaria dornii*, a BLM sensitive plant species, and to a cushion plant community containing five endemic plant species (BLM 1986a). The seven other species on the Wyoming BLM special status species list have no formal protection through use restrictions.

When use restrictions are not implemented, mitigation measures can be used to lessen adverse impacts to special status species. These include off-site compensation or habitat restoration, measures which often have a low success rate either because many special status species have unusual habitat requirements that are difficult to locate off-site or because specific habitat requirements of the special status species are poorly understood.

2.17.3 Issues and Management Concerns

Issues and management concerns related to special status plants and wildlife in the Planning Area include:

2.17.3.1 Animals

Aquatic

- Water depletion has been identified as a fisheries resource management issue.

Terrestrial

- Special status species critical thresholds;
- Habitat fragmentation; and
- Use conflicts (e.g., OHV, recreation, livestock grazing).

2.17.3.2 Plants

- Rehabilitation or restoration techniques for special status plant species present an issue for the Kemmerer Field Office.

2.17.4 Management Opportunities

Opportunities for managing special status aquatic and terrestrial animals and fish are briefly discussed in the following sections.

2.17.4.1 Animals

Aquatic

- Consider restriction of disposal of aquatic and riparian/wetland areas to exchange only (no sales) for lands of equal or better value (both functional and monetary values).
- Consider on a case-by-case basis permanent structures and linear facilities (e.g., roads, pipelines) in aquatic and riparian/wetland areas.
- Seek opportunities to conserve important or key fisheries habitats to provide for meta-population connectivity of special status fisheries.
- Revise and renew the Bonneville Cutthroat Trout Interagency Five Year Plan, which expired in 1997, with Wyoming Game and Fish Department (WGFD) and USFS.
- Coordinate with WGFD on planning efforts.

Terrestrial

Possible management opportunities include:

- Identify occurrence and distribution, potential conflicts, and management strategies to provide adequate protection.
- Continue to develop the Wheat Creek Meadows Habitat Management Plan.
- Continue to identify wildlife habitat improvement opportunities.
- Develop special status species conservation measures.
- Consider white-tailed prairie dog ACEC petition.

2.17.4.2 Plants

Opportunities include:

- Promote coexistence of multiple use activities and special status species habitat.
- Establish management prescriptions or stipulations for special status species.
- Provide protocols for special status plant species searches prior to project or activity implementation.
- Determine if exclusion by fencing, signs, or timing of activities can provide better protection for special status plant species.

- Determine desired plant communities to guide vegetation management.

2.18 Transportation and Access

2.18.1 Overview

The BLM manages access to and across public lands. The BLM grants ROWs for access across public land and acquires easements to access public land. Access objectives include providing legal public access to public lands and managing existing roads and access easements.

Transportation includes motor vehicle and mass transit access to public lands and related infrastructure management. The transportation infrastructure for the Kemmerer Field Office is extensive and provides adequate physical access through the planning area.

The Kemmerer Field Office is located in southwestern Wyoming and includes a portion of Interstate 80 (I-80) and a network of other roadways that serve motorists in western Wyoming. I-80 provides east-west access across southern Wyoming and the nation. Primary and secondary highways (189, 30, and 89) connect the primary communities in the region and provide access to a series of county roads that provide public access to remote areas of the planning area (Figure 10).

2.18.2 Current Management Practices

The Kemmerer Field Office seeks legal public access to areas utilized for recreation, renewable and nonrenewable energy development, range management, and communication site management. The BLM acquires access through purchase, exchange, reciprocal ROW, and donation, and coordinates access activities with federal, state, local, and, as appropriate, tribal agencies. The most frequently encountered access need is to provide ROWs across public lands. Access is also sought across private land if a need is identified. The Kemmerer Field Office currently manages 39 easements acquired for legal public access to public lands.

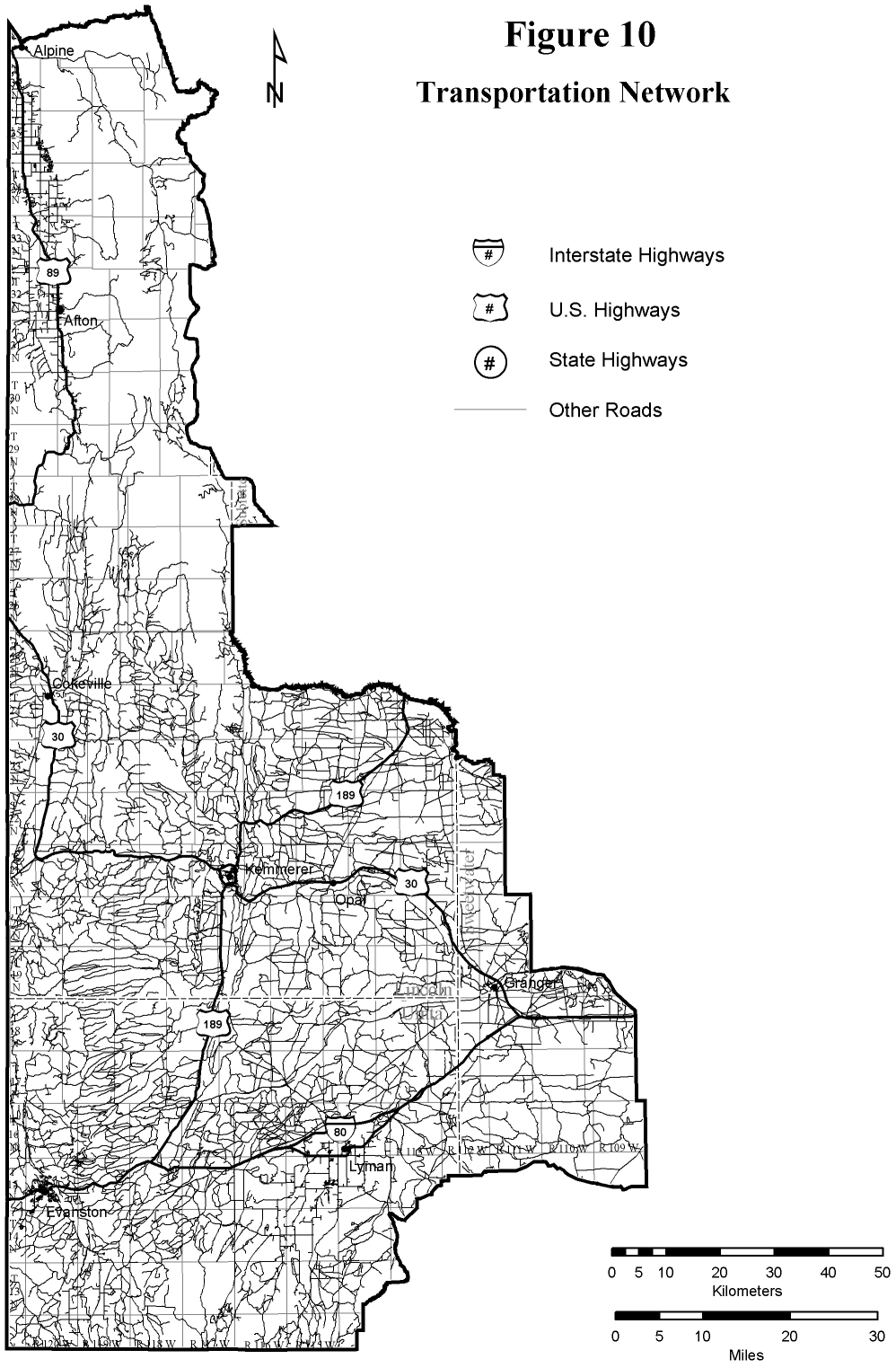
The Kemmerer Field Office grants ROW on a case-by-case basis. The majority of ROWs granted over the past 20 years have been primarily for oil and gas gathering systems, power lines, and roads. ROW grants for road access constitute a significant portion of the Lands and Realty program in the Kemmerer Field Office (see Section 2.7).

2.18.3 Issues and Management Concerns

Transportation and access issues and management concerns include:

Figure 10

Transportation Network



- Legal public access to some parcels of public land is not available or is inadequate.
- Access restrictions to areas that may pose a threat to public health and safety (e.g., abandoned mine lands) or significant resource values (e.g., National Historic Trails and crucial winter range).
- Maintenance of current legal public access routes to public lands requires ongoing improvements and associated funding.
- Many legal public access routes are not identified by information and/or direction signs.

2.18.4 Management Opportunities

Preliminary management opportunities within the planning area include:

- Continue to secure access to public lands necessary for recreation, renewable and nonrenewable energy development, range management, and communication site management.
- Continue to identify areas where ROWs will be avoided or excluded.
- Continue to identify areas that may be closed or restricted to protect public health and safety (e.g., abandoned mine lands).

2.19 Vegetative Resources

Vegetation types in the planning area are presented in Figure 11. Vegetative resources in the Kemmerer Planning Area are divided into woodland and forest communities; riparian and wetland communities; upland grass and shrub communities; and INPS.

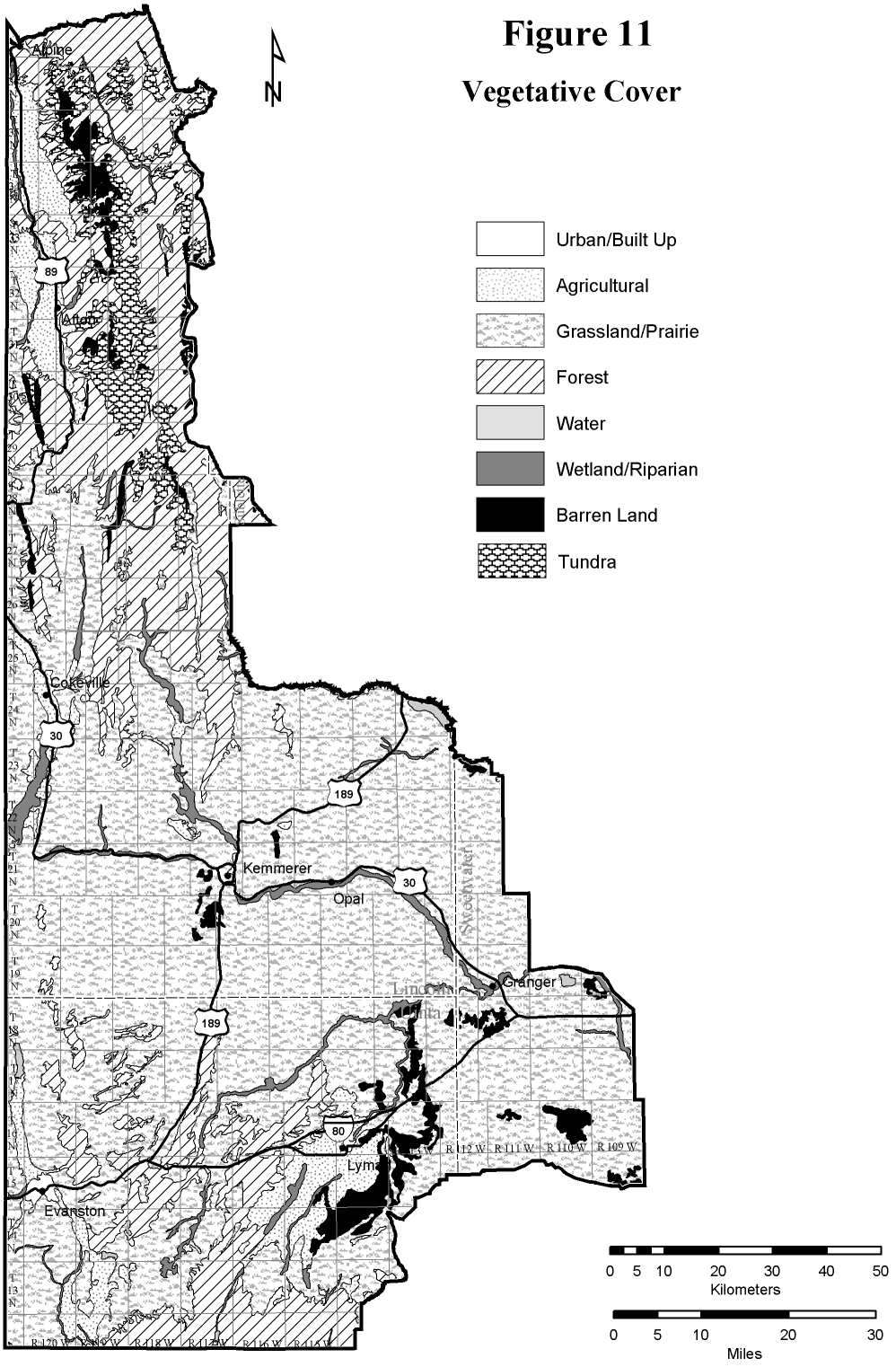
2.19.1 Overview

2.19.1.1 Forest Communities

The Kemmerer Field Office administers 16,165 acres of forestland and approximately 15,000 acres of woodland. Forestlands are comprised of lodgepole pine, Douglas-fir, and subalpine fir. Woodlands include quaking aspen, Rocky Mountain juniper, and Utah juniper. Sawtimber-sized trees are found on approximately 56 percent of the forestlands (BLM 1982). Bark beetles are present and causing mortality throughout the entire range of forest lands with pockets of epidemic levels in various locations in the Commissary Ridge and Dempsey Ridge areas (Schiche 2003a).

Figure 11

Vegetative Cover



2.19.1.2 Grassland and Shrubland Communities

Shrublands make up approximately 62 percent of the total private, state, and federal land within the Kemmerer Planning Area (Table 9). Shrub communities include desert shrub, greasewood fans and flats, mesic upland shrub, xeric upland shrub, mountain big sagebrush, and Wyoming big sagebrush. Grasslands make up approximately 4 percent of the total area within the Kemmerer Planning Area and include Great Basin foothills grassland, mixed grass prairie and subalpine meadow.

Table 9. Shrublands and Grasslands

Vegetation Type	Acres[1]	Percent Area
Shrubland	2,431,223	62
Grassland	157,405	4

Note: 1. Includes private, state, and federal lands.
Source: Wyoming GAP 1996.

Desert shrub communities are often dominated by shadscale saltbush, but may be a mixture of Gardner's saltbush, black greasewood and/or desert pincushion cactus. The desert shrub vegetation type is usually found in central and western Wyoming in flats and fans. Where greasewood comprises greater than 75 percent of total ground cover, the community is classified as greasewood. Greasewood communities generally occur along streams at low to medium elevations.

Mesic upland shrub includes a variety of shrub species. The dominant and co-dominant species include Rocky Mountain maple, bigtooth maple, serviceberry, snowberry, wax currant and/or chokecherry. Mesic upland shrub communities typically occur in the foothills and mesic environments throughout Wyoming. Xeric upland shrub communities are dominated by mountain mahogany and generally occur on dry slopes or flats at mid-elevations in shallow soils.

Sagebrush communities account for more than 50 percent of the vegetative cover in the Kemmerer Planning Area, with Wyoming big sagebrush representing 1,772,923 acres (45 percent) of the Kemmerer Planning Area. Wyoming big sagebrush is found throughout Wyoming except for in the extreme southeast corner. Mountain big sagebrush is found in more mesic sites than Wyoming big sagebrush and often occurs in mountain parks. Mountain big sagebrush is not found east of the Laramie Range in Wyoming. Total shrub cover within Wyoming big sagebrush and mountain big sagebrush communities comprises greater than 25 percent of the total vegetative cover.

Mixed grass prairie contains a mixture of short and tall grass prairie species, but does not contain buffalo grass, an indicator of short grass prairie. Grass species that do occur in mixed grass prairies include western wheatgrass, blue grama, needle and thread, threadleaf sedge, Sandberg bluegrass, and prairie junegrass. Great Basin foothills grassland is a grass-forb mix found in the foothills of northwestern Wyoming and includes species such as bluebunch wheatgrass, arrowleaf balsamroot, silvery lupine, Idaho fescue, spike fescue, Richardson's geranium, and old man's whiskers. Subalpine meadows occur in mountain parks within and below the upper treeline, with graminoid- and forb-dominated species. Subalpine meadows comprise the majority (3.6 percent) of the grasslands within the Kemmerer Planning Area.

2.19.1.3 Invasive Nonnative Plant Species

The mission of Kemmerer Field Office is:

- To detect populations of invasive plant species;
- To prevent the spread of new invasive plant populations;
- To manage existing invasive plant populations using the tools of integrated weed management;
- Educational outreach; and
- To eradicate invasive populations when and where possible using the safest environmental methods available in a timely manner.

The proliferation of invasive nonnative plant species (INPS) contributes to loss of rangeland productivity, increased soil erosion, reduced water quantity and quality, reduced structural and species diversity, and loss of wildlife habitat. In some instances, these species are hazardous to human health and welfare, as emphasized in the Federal Noxious Weed Act of 1974. For the purpose of this document, the general term for invasive species is INPS. Invasive plants listed by the State of Wyoming and weed control districts are termed 'noxious.' Not all INPS in Wyoming are considered noxious by the State of Wyoming, and some species listed as noxious by the State are native to North America.

Infestations of INPS spread sporadically throughout the Kemmerer Planning Area. The weed program is continually growing as a result of changing priorities, new INPS introductions, discovery of new infestations, and the rapid growth of known infestations. GIS mapping of weed locations is ongoing to determine locations of known weeds as well as locate new infestations.

The BLM Kemmerer Field Office operates under the direction in the 1986 RMP and ROD and INPS protocols as set forth in the following documents: (1) Vegetation Treatment on BLM Lands in the Thirteen Western States Final EIS and ROD (1991); and (2) Cooperative agreements with weed and pest control districts (Lincoln County Weed and Pest District and Uinta County Weed and Pest District.)

2.19.1.4 Riparian and Wetland Communities

Riparian and wetland communities are more structurally diverse and produce more plant and animal biomass than adjacent uplands in the Kemmerer Planning Area. Riparian areas, adjacent to flowing (lotic) and standing (lentic) water, form transition zones between aquatic and upland areas, and may or may not be jurisdictional wetlands.

Wetlands are determined to be present at a location if the following criteria are met: simultaneous occurrence of at least fifty-percent hydrophytic (water-loving) vegetation, wetland hydrology, and hydric soils (Environmental Laboratory 1987).

Three types of riparian and wetland communities are present in the planning area. These are forest-dominated riparian, graminoid-dominated wetland, and shrub-dominated riparian. Open water areas represent less than 1 percent of lands administered by the Kemmerer Field Office. Open water communities include lakes and reservoirs with areas greater than 99 acres and do not include rivers.

Within the Kemmerer Planning Area, PFC assessments were completed on 404 miles of riparian areas associated with flowing water (e.g., streams and rivers), and 339 acres of riparian areas associated with standing water (e.g., lakes, reservoirs, and ponds) (Table 10). Of the Functional At Risk stream miles, 18 percent show an upward trend; for 37 percent no trend was apparent, and 7 percent show a downward trend.

Table 10. Riparian/Wetland Area Proper Functioning Condition

Riparian/Wetland Type	Total Area Evaluated	Proper Functioning Condition		Functional At Risk		Non-Functional	
		Area	Percent	Area	Percent	Area	Percent
Streams/Rivers[1]	404 miles	129 miles	32	250 miles	62	25 miles	6
Lakes, Reservoirs, Ponds	339 acres	289 acres	85	40 acres	12	10 acres	3

Note: 1. Perennial streams and rivers measured in valley length rather than channel length.

2.19.2 Current Management Practices

2.19.2.1 Forest Communities

Since 1984, about 8 million board feet of sawtimber has been harvested from 500 acres of lodgepole pine forestlands throughout the Kemmerer Planning Area (Schiche 2003b). All of these forestlands have successfully regenerated, and approximately 350 acres are ready for pre-commercial thinning to optimize growing conditions (Schiche 2002).

Active management is not possible on approximately 3,000 acres of forestland, almost all of which is in the Raymond Mountain Wilderness Area.

Another 80 acres of forestland is not available for active management due to forest clearing for ski runs at the Pine Creek Ski Area.

The 13,000 acres of forestland available for forest management contain approximately 7,000 acres of mature sawtimber, with a full average annual allowable sale quantity of 600 thousand board feet (Schiche 2003c).

Approximately 250 cords of fuelwood, 50 Christmas trees, and 1,000 post and poles are sold annually from forestland within the Kemmerer Planning Area. Virtually no forest products are harvested from the aspen and juniper woodlands (Schiche 2003d).

2.19.2.2 Grassland and Shrubland Communities

Current management practices are the various resources and resource uses including range management, riparian management, soils management, forest management, and grazing. Forage is managed on a sustained yield basis as required by the Taylor Grazing Act and FLPMA.

2.19.2.3 Invasive Nonnative Plant Species

BLM is targeting 22 INPS designated by the State of Wyoming as noxious weeds (Table 11). INPS typically occur in disturbed areas (e.g., roadways, oil and gas location). The Kemmerer Field Office treats an average of 1,000 acres of various weed species each year. The BLM uses an integrated weed management program that involves grazing, fire management, chemical, mechanical, and biological controls (BLM 1990; BLM 1992). INPS are a high priority for control and management because they contribute to the loss of rangeland productivity, increased soil erosion, reduced water quantity and quality, reduced species diversity, and loss of wildlife habitat.

2.19.2.4 Riparian and Wetland Communities

The Riparian Wetland Initiative of 1991 established national goals and objectives for BLM to manage riparian-wetland resources on public lands. In 1999, methods for assessing PFC for lotic and lentic areas were finalized in technical reports TR-1737-15 and TR-1737-16, respectively. Prior to their finalization, the draft methods were used and PFC surveys commenced in 1994. The Kemmerer Field Office focuses management on the entire watershed in order to improve water quality within riparian zones to benefit all users. BLM's objectives for managing riparian areas include assessing, restoring, and protecting riparian zones toward a desired future condition for an area, while providing for other land management activities.

Table 11. Noxious Weeds

Common Name	Level of Concern
Black henbane	High
Canada thistle	High
Common burdock	Low
Dalmation toadflax	High
Diffuse knapweed	Low
Dyers woad	Moderate
Halogeton	Low
Hoary cress (whitetop)	High
Houndstongue	Moderate
Leafy spurge	Moderate
Musk thistle	High
Perennial pepperweed (giant whitetop)	High
Perennial sowthistle	Low
Russian knapweed	Low
Saltcedar	Low
Scotch thistle	Low
Spotted knapweed	Moderate
Yellow toadflax	Low

As management plans for grazing allotments are developed, desired future conditions for each individual riparian/wetland area are included.

The Kemmerer Field Office is currently involved in two Noxious Weed Coordinated Resource Management working groups within Lincoln and Uinta Counties. The Bear River Divide Weed Management Area includes both Lincoln and Uinta Counties. It covers most of the Cumberland/Uinta Allotments (approximately 400,000 acres) and the Highlands Cooperative Weed Management Area, which includes the portion west of Lincoln County not included in the Bear River Divide Weed Management Area.

Numerous educational programs are used to make the public aware of weeds, such as education days at schools, essay contests for school students, and scheduled weed workdays with federal and state agencies as well as with the general public.

2.19.3 Issues and Management Concerns

2.19.3.1 Forest Communities

Forest issues include:

- Reduction of the amount of sawtimber available due to designation of lynx analysis units.
- Sawtimber production and elk calving areas.

2.19.3.2 Grassland and Shrubland Communities

Vegetation issues and management concerns of the Kemmerer Planning Area include:

- Vegetative diversity in portions of the planning area; and
- Productivity in some shrubland and grassland communities.

2.19.3.3 Invasive Nonnative Plant Communities

A management concern specific to INPS includes:

- Invasion of noxious weeds and cheatgrass in burn areas.

2.19.3.4 Riparian and Wetland Communities

Issues and management concerns related to riparian and wetland areas include:

- Livestock use in riparian zones; and
- Functional At Risk and Non-Functional riparian areas.

2.19.4 Management Opportunities

2.19.4.1 Forest Communities

Preliminary management opportunities for forest resources include:

- Continue to consider wildlife habitat values associated with forest land management.
- Continue to manage for fuelwood, Christmas trees, and posts and poles.
- Continue to incorporate the Forest Health Initiative and the National Fire Plan into management.

The Forest Health Initiative emphasizes the goal of reducing insect, disease, and forest stock conditions. The National Fire Plan directs the reduction of hazardous fuels on forestlands.

2.19.4.2 Grassland and Shrubland Communities

One opportunity for management is to continue vegetation treatments, including mowing, prescribed burning, and chemical treatment. These treatments should occur in the mountain mixed shrub and

sagebrush/grassland community types. Other opportunities may be developed throughout the RMP revision process.

2.19.4.3 Invasive Nonnative Plant Species

Management opportunities include:

- Continue to implement policies and practices related to cleaning fire vehicles to minimize spread of noxious weeds.
- Require the use of Certified Noxious Weed Free Forage within the Kemmerer Planning Area.
- Require that any seed or seed mixtures used in areas managed by the Kemmerer Field Office be weed free.

2.19.4.4 Riparian and Wetland Communities

Management opportunities for riparian and wetland areas within the Kemmerer Planning Area include:

- Meet standards and guidelines needed for healthy sustainable rangelands and riparian areas for threatened and endangered species, wildlife, water quality and fisheries.
- Continue to maintain or enhance riparian areas currently in PFC.
- Continue reassessment of riparian and wetland area condition.
- Restore riparian areas that are currently rated as functional at-risk or non-functional to PRC.

2.20 Visual Resource Management

2.20.1 Overview

VRM in the Kemmerer Planning Area focuses on values and resources existing in broad areas with vast vistas involving native landscapes and unique areas with spectacular quality. Examples of areas with high values include Raymond Mountain, Rock Creek Ridge, and Slate Creek Ridge. Examples of key resources include Fossil Butte National Monument and the Green River. The visual resources in the planning area vary in terms of current value and sensitivity to degradation.

Visual Resource Management

"The inventory and planning actions taken to identify visual values and to establish objectives for managing those values; and the management actions taken to achieve the visual management objectives." - BLM Manual 8400

Through a broad range of regulations and planning criteria, BLM is required to manage BLM-administered lands in a manner that will preserve the scenic values. The FLPMA and

NEPA describe federal mandates, while documents such as BLM Manual 8400-Visual Resource Management (BLM 1984) and BLM Manual 8410-1-Visual Resource Inventory and Evaluation (BLM 1986b) are essential to carrying out the process and developing proper management actions. Through VRM, the BLM helps prevent environmental degradation while maintaining sociologically important resource values.

2.20.2 Current Management Practices

BLM's VRM classification system consists of three phases:

1. Inventory (Visual Resource Inventory);
2. Establishment of Management Classes through Land Use Plans; and
3. Analysis of Management Actions to Ensure Compliance (Visual Resource Contrast Rating).

VRM Classes are assigned to areas based on the combination of scenic quality, visual sensitivity, and distance zones. VRM Classes I through IV range from completely natural landscapes to landscapes containing extensive human modification. Visual values are considered throughout the RMP process, and the area's visual resources are then assigned to management classes with established objectives. Management classes in a land use plan formalize the findings of the inventory process. VRM classes are established through the RMP process and adjustments are made to reflect resource allocation decisions made in the RMP. The goal of VRM is to minimize the visual impacts of all surface-disturbing activities regardless of the class in which they occur.

The VRM class objectives are as follows:

- *Class I* Objective: To preserve the existing character of the landscape. The level of change to the characteristic landscape must be very low and must not attract attention.
- *Class II* Objective: To retain the existing character of the landscape. The level of change to the characteristic landscape must be low.
- *Class III* Objective: To partially retain the existing character of the landscape. The level of change to the characteristic landscape must be moderate.
- *Class IV* Objective: To provide for management activities that require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high.

A visual resource inventory for the Kemmerer Field Office was conducted in 1976; however, a corresponding VRM Management Class map was not prepared until 1986. This map was prepared to be consistent with the overall resource management objectives of the current Kemmerer RMP and sets forth current VRM management policy. The 1986 Management Class map provides for 421,873 acres of Class II land, 796,197 acres of Class III land, and 1,760,782 acres of Class IV land. There are no Class I lands and no rehabilitation areas on the 1986 map. Boundaries are subject to change as more inventories and evaluations are conducted.

2.20.3 Issues and Management Concerns

Management concerns related to VRM focus on the following:

- Visual resource planning consistency with the Wasatch National Forest and Bridger Teton National Forest.

2.20.4 Management Opportunities

Possible VRM opportunities include:

- Consider reclassification of the Raymond Mountain WSA from Class II to Class I.
- Continue to evaluation reclassifications that strive for visual management consistency among various other land use plans within and adjacent to the planning area.

2.21 Water Resources

2.21.1 Overview

The Kemmerer Planning Area encompasses portions of three regional watersheds including the Green River, the Bear River, and the Snake River watershed. The majority of planning area is sagebrush steppe and receives between less than 6 and 10 inches of water per year (based on the years between 1941 and 1990) and at higher elevations the area receives between 10 and 60 inches per year. Figure 12 presents major streams and lakes in the Kemmerer Planning Area.

Water resources in the Kemmerer Planning Area include both surface and subsurface water. The availability, volume and quality of water resources affect many other resources, including riparian, wildlife, fisheries, and public water supplies. This variability can cause consequences to the natural environment and to human health, structures, and finances. There are many different factors that affect groundwater quality and quantity, including geology, land use, depth, and rate of recharge.

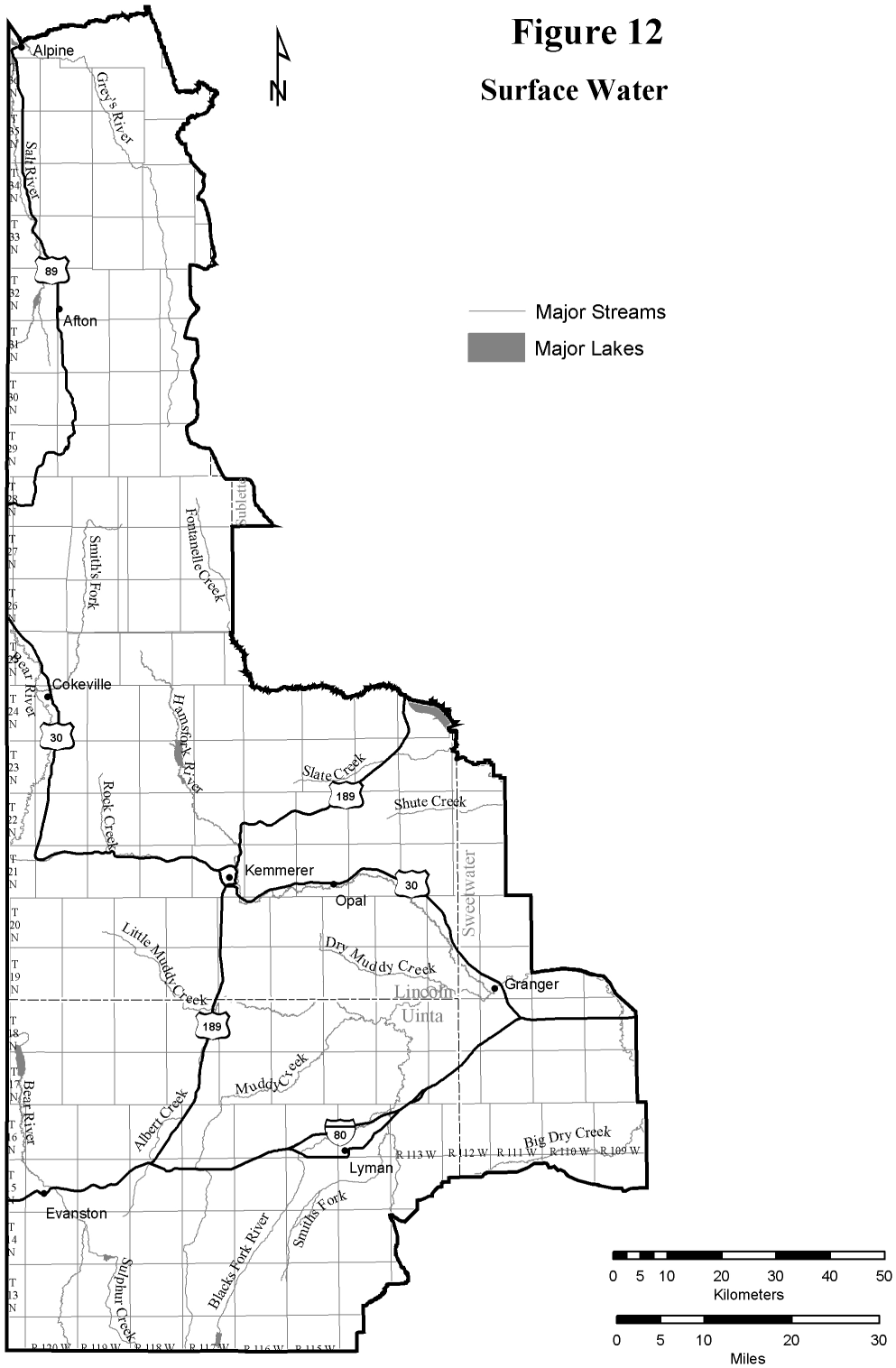
On private and state lands, the primary uses of water are domestic and agricultural. On federally managed public lands, the primary uses of water are livestock production and as drilling fluids for hydrocarbon production wells.

2.21.2 Current Management Practices

Surface water is governed by the Wyoming constitution under the doctrine of prior appropriation, or "first in time, first in right." Although water rights

Figure 12

Surface Water



are considered property rights that are joined to the land, the Wyoming State Engineer's Office or Board of Control can transfer them in use or location after a review. Activities within the Kemmerer Planning Area are managed to comply with state and federal water quality standards. Reviewing proposed actions and developing mitigating measures to prevent degradation of the water resources can help accomplish compliance.

Actions within the planning area are designed to protect and enhance water resources. Measures such as avoiding highly erosive areas, implementing zero runoff programs on large-scale disturbances, and reclamation of all abandoned surface disturbances are enforced. Potable ground water supplies are protected, and oil and gas wells are cased below freshwater zones and cemented to prevent the contamination of aquifers. Other measures to enhance and protect water include plugging exploration holes and reducing sedimentation during road building and surface-disturbing activities.

The BLM coordinates with different state and federal agencies to ensure that all water resource management responsibilities are carried out. This includes the Wyoming DEQ, which is responsible for water quality, the Army Corps of Engineers, responsible for modifications within wetlands and waters of the U.S., and the Wyoming State Engineers Office, responsible for water rights.

2.21.3 Issues and Management Concerns

- Salinity control;
- Water supply; and
- Potential user conflicts (e.g., livestock, domestic).

2.21.4 Management Opportunities

Select opportunities include:

- Conduct watershed management at the 6th order watershed level.
- Continue to coordinate with adjacent BLM field offices and state and federal agencies to combine surface and ground water monitoring efforts.

CHAPTER 3.0 WHERE DO WE GO FROM HERE?

This chapter briefly identifies the next steps in the RMP revision process. Information on providing feedback is described and a request to be added to the mailing list form is also provided.

3.1 Next Steps

The MSA Summary has been distributed for public and agency review. Scoping meetings on the RMP revision and associated EIS are scheduled to occur November 17 through 19, 2003. Shortly thereafter, the formulation of alternatives process will begin. This process will consider the input received during review of the MSA Summary and scoping. Alternative formulation will be a collaborative process and involve input from the cooperating agencies. The RMP revision process is outlined in Chapter 1.0.

3.2 Providing Feedback

The BLM always welcomes comments on land and resource management in the Kemmerer Planning Area. Specifically the BLM is requesting help in identifying additional issues and concerns, management alternatives, or other ideas to be considered in the planning effort. Currently, the most helpful comments are regarding the Summary of the MSA. It is most useful when you include the reason behind your support for, or opposition to, the proposed topics for revision or other information contained in the topic discussion. Please help us not only to know what you think but also to understand why.

Names and addresses will be used to compile and update the mailing list for distributing future information regarding the RMP revision. Public comments submitted for this planning effort, including names and street addresses of respondents, will be available for public review in their entirety after the comment period closes at the Kemmerer Field Office during regular business hours (7:45 a.m. to 4:30 p.m.), Monday through Friday, except federal holidays. Individual respondents may request confidentiality. If you wish to withhold your name or address from public review or from disclosure under the Freedom of Information Act (FOIA), you must state this prominently at the beginning of your comments. Such requests will be honored to the extent allowed by law. All submissions from organizations or businesses, and from individuals or officials representing organizations or businesses, will be made available for public inspection in their entirety.

There are several ways you can communicate with us:

Write Soon! While this is only the beginning of the RMP revision process, we want to incorporate your comments into the next steps in the process.

Please write to RMP Project Manager, BLM Kemmerer Field Office, 312 Highway 189 North Kemmerer, Wyoming 83101 by November 26, 2002.

Website. You may also send comments or questions and access important RMP revision information by visiting the RMP revision website at www.blm.gov/rmp/kemmerer.

Let's Talk! If you have questions, you may also call the RMP Project Manager at 307-828-4500. BLM staff is happy to come to your next group meeting or meet with you at our office to answer questions and hear your views on the RMP revision.

Request to be Added to the RMP Revision Mailing List

If you are not already on the mailing list for the BLM Kemmerer Field Office RMP revision, please write your name and address below.

Name: _____

Address: _____

City: _____ State: _____ Zip: _____

Send this page to:

BLM Kemmerer Field Office
312 Highway 189 North
Kemmerer, Wyoming 83101
Attention: RMP revision

Public comments submitted for this planning effort, including names and street addresses of respondents, will be available for public review in their entirety after the comment period closes at the Kemmerer Field Office during regular business hours (7:45 a.m. to 4:30 p.m.), Monday through Friday, except federal holidays. Individual respondents may request confidentiality. If you wish to withhold your name or address from public review or from disclosure under FOIA, you must state this prominently at the beginning of your comments. Such requests will be honored to the extent allowed by law. All submissions from organizations or businesses, and from individuals or officials representing organizations or businesses, will be made available for public inspection in their entirety.

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APPENDIX A
PRELIMINARY PLANNING ISSUES AND CRITERIA

APPENDIX A PRELIMINARY PLANNING ISSUES AND CRITERIA[1]

Preliminary Planning Issues

- Energy and mineral resource exploration and development;
- Access to and transportation on BLM lands;
- Recreation and Off-Highway Vehicle management;
- Wildlife habitat and management of crucial habitat and migration corridors;
- Management and cumulative effect of land uses and human activities on Threatened, Endangered, Candidate, and Sensitive species and their habitats;
- Vegetation, including impacts of invasive species;
- Management of cultural and paleontological resources, including National Historic Trails;
- Land ownership adjustments;
- Fire management;
- Livestock grazing;
- Visual Resource Management;
- Potential establishment of special management areas; and
- Air and water quality.

Preliminary Planning Criteria

- The revised RMP will recognize the existence of valid existing rights.
- The decisions in the revised RMP will cover BLM-administered public lands, including split-estate lands where the subsurface minerals are severed from the surface right, and the BLM has legal jurisdiction over one or the other.
- The BLM will use a collaborative and multi-jurisdictional approach to determine the desired future condition of public lands.
- The BLM will strive to ensure that its management decisions are complimentary to other planning jurisdictions and adjoining properties, within the boundaries described by law and regulation.
- The environmental analysis will consider a reasonable range of alternatives that focus on the relative values of resources and respond to the issues. Management prescriptions will reflect multiple use resource principles.
- The BLM will use current scientific information, research, new technologies, and the results of resource assessments, monitoring, and coordination to determine appropriate local and regional management strategies that will enhance or restore impaired ecosystems.
- Revised RMP decisions will comply with all applicable laws, regulations, policy, and guidance.

[1] Published in the *Federal Register* Notice of Intent.

APPENDIX B
PLANT AND WILDLIFE SCIENTIFIC AND COMMON NAMES

APPENDIX B – PLANT AND WILDLIFE SCIENTIFIC AND COMMON NAMES

Common Name	Scientific Name
PLANTS	
Basin big sagebrush	*Artemisia tridentata*
Beaver Rim phlox	*Phlox pungens*
Birdfoot sagebrush	*Artemisia pedatifida*
Black henbane	*Hyoscyamus niger*
Blowout penstemon	*Penstemon haydenii*
Canada thistle	*Cirsium arvense L.*
Chokecherry	*Prunus virginiana*
Colorado butterfly plant	*Gaura neomexicana var. coloradensis*
Common burdock	*Arctium minus (Hill) Bernh.*
Common tansy	*Tanacetum vulgare*
Curlleaf mahogany	*Cercocarpus ledifolius*
Currant	*Ribes spp.*
Dalmatian toadflax	*Linaria dalmatica (L.) Mill.*
Deep creek cinquefoil	*Potentilla multisecta*
Desert glandular phacelia	*Phacelia glandulosa* var. *deserta*
Diffuse knapweed	*Centaurea diffusa Lam.*
Divergent wild buckwheat	*Eriogonum divaricatum*
Dorn's twinpod	*Physaria dornii*
Douglas' campion	*Silene douglasii*
Douglas fir	*Pseudotsuga menziesii*
Downy brome	*Bromus tectorum*
Dyers woad	*Isatis tinctoria L.*
Entire-leaved peppergrass	*Lepidium integrifolium var. integrifolium*
Field bindweed	*Convolvulus arvensis L.*
Fullstem	*Chamaechaenactis scaposa*
Gardner saltbush	*Atriplex gardneri*
Garrett's beardtongue	*Penstemon scariosus* var. *garrettii*
Greasewood	*Sarcobatus vermiculatus*
Great Basin downingia	*Downingia laeta*
Halogeton	*Halogeton glomeratus*
Hayden's milkvetch	*Astragalus bisulcatus* var. *haydenianus*
Hoary cress (whitetop)	*Cardaria draba (L.) Desv. and Cardaria pubescens*

Common Name	Scientific Name
Houndstongue	*Cynoglossum officinale L.*
Japanese brome	*Bromus japonicus*
Juniper prickly-pear	*Opuntia polyacantha* var. *juniperina*
Laramie columbine	*Aquilegia laramiensis*
Laramie false sagebrush	*Sphaeromeria simplex*
Large-fruited bladderpod	*Lesquerella macrocarpa*
Leafy spurge	*Euphorbia esula L.*
Limber pine	*Pinus flexilis*
Lodgepole pine	*Pinus contorta var. latifolia*
Many-stemmed spiderflower	*Cleome multicaulis*
Moab milkvetch	*Astragalus coltonii var moabensis*
Mountain big sagebrush	*Artemisia tridentata var. vaseyana*
Mountain mahogany	*Cercocarpus montanus*
Musk thistle	*Carduus nutans L.*
Narrow-leaved bladderpod	*Lesquerella parvula*
Nelson's milkvetch	*Astragalus nelsonianus*
Nevada sweetpea	*Lathyrus lanszwertii* var. *lanszwertii*
Ox-eye daisy	*Chrysanthemum leucanthemum L.*
Perennial pepperweed (giant whitetop)	*Lepidium latifolium L.*
Perennial sowthistle	*Sonchus arvensis L.*
Plumeless thistle	*Carduus acanthoides L.*
Ponderosa pine	*Pinus ponderosa*
Porter's sagebrush	*Artemisia porteri*
Prostrate bladderpod	*Lesquerella prostrata*
Puncture vine	*Tribulus terrestris*
Purple loosestrife	*Lythrum salicaria L.*
Quackgrass	*Agropyron repens L. Beauv.*
Quaking aspen	*Populus tremuloides*
Rocky Mountain juniper	*Juniperus scopulorum*
Rufous-spine prickly-pear	*Opuntia polyacantha* var. *rufispina*
Russian knapweed	*Centaurea repens L.*
Saltcedar	*Tamarix spp.*
Scotch thistle	*Onopordum acanthium L.*
Serviceberry	*Amelanchier alnifolia*
Sickle saltbush	*Atriplex falcata*
Silver sagebrush	*Artemisia cana*

Common Name	Scientific Name
Skeletonleaf bursage	*Franseria discolor Nutt.*
Snowberry	*Symphoricarpos albus*
Sodaville milkvetch	*Astragalus lentiginosus* var. *salinus*
Spotted knapweed	*Centaurea maculosa Lam.*
St. Johnswort	*Hypericum spp.*
Subalpine fir	*Abies lasiocarpa*
Swallen mountain- ricegrass	*Achnatherum swallenii*
Trelease's racemose milkvetch	*Astragalus racemosus var. treleasei*
Tufted twinpod	*Physaria condensata*
Ute ladies' tresses	*Spiranthes diluvialis*
Wax currant	*Ribes cereum*
Western bladderpod	*Lesquerella multiceps*
Western prairie fringed orchid	*Platanthera praeclara*
White-margined phlox	*Phlox albomarginata*
Williams' wafer-parsnip	*Cymopterus williamsii*
Wood's rose	*Rosa woodsii*
Wyoming big sagebrush	*Artemisia tridentata var. wyomingensis*
Wyoming threetip sagebrush	*Artemisia tripartita*
Yellow toadflax	*Linaria vulgaris L.*
WILDLIFE	
Badger	*Taxidea taxus*
Baird's sparrow	*Ammodramus bairdii*
Bald eagle	*Haliaeetus leucocephalus*
Beaver	*Castor canadensis*
Bighorn sheep	*Ovis canadensis*
Black bear	*Ursus americanus*
Black-footed ferret	*Mustela nigripes*
Black-tailed prairie dog	*Cynomys ludovicianus*
Bluehead sucker	*Catostomus discobolus*
Bobcat	*Felis rufus*
Bonneville cutthroat trout	*Oncorhynchus clarki utah*
Bonytail chub	*Gila elegans*
Boreal toad	*Bufo boreas boreas*
Brewer's sparrow	*Spizella breweri*
Burrowing owl	*Athene cunicularia*
Canada lynx	*Lynx canadensis*

Common Name	Scientific Name
Colorado pikeminnow	*Ptychocheilus lucius*
Colorado River cutthroat trout	*Oncorhynchus clarki pleuriticus*
Coot	*Fulica americana*
Elk	*Cervus elaphus*
Eskimo curlew	*Numenius borealis*
Ferruginous hawk	*Buteo regalis*
Flannelmouth sucker	*Catostomus latipinnis*
Fringed myotis	*Myotis thysanodes*
Gray wolf	*Canis lupus*
Great Basin spadefoot	*Spea intermontanus*
Greater sage-grouse	*Centrocercus urophasianus*
Grizzly bear	*Ursus horribilis*
Humpback chub	*Gila cypha*
Idaho pocket gopher	*Thomomys idahoensis*
Interior least tern	*Sternum antillarum anthalassos*
Leatherside chub	*Snyderichthys copei*
Loggerhead shrike	*Lanius ludovicianus*
Long-billed curlew	*Numenius americanus*
Long-eared myotis	*Myotis evotis*
Marten	*Martes americana*
Mink	*Mustela vison*
Mountain lion	*Puma concolor*
Mountain plover	*Charadrius montanus*
Mule deer	*Odocoileus hemionus*
Muskrat	*Ondatra zibethicus*
Northern goshawk	*Accipiter gentilis*
Northern leopard frog	*Rana pipiens*
Pallid sturgeon	*Scaphirhynchus albus*
Peregrine falcon	*Falco peregrinus*
Pheasant	*Phasianus colchicus*
Piping plover	*Charadrius melodus*
Preble's meadow jumping mouse	*Zapus hudsonius preblei*
Pronghorn antelope	*Antilocapra americana*
Pygmy rabbit	*Sylvilagus idahoensis*
Raccoon	*Procyon lotor*
Razorback sucker	*Xyrauchen texanus*

Common Name	Scientific Name
Red fox	*Vulpes vulpes*
Roundtail chub	*Gila robusta*
Sage sparrow	*Amphispiza belli*
Sage thrasher	*Oreoscoptes montanus*
Snake River (fine-spotted) cutthroat trout	*Oncorhynchus clarki ssp. 2*
Snipe	*Gallinago gallinago*
Spotted bat	*Euderma maculatum*
Spotted frog	*Rana luteiventris*
Swift fox	*Vulpes velox*
Townsend's big-eared bat	*Corynorhinus townsedii pallescens*
Trumpeter swan	*Cygnys buccinator*
Turkey	*Meleagris gallopavo*
White-faced ibis	*Plegadis chihi*
White-tailed deer	*Odocoileus virginianus*
White-tailed prairie dog	*Cynomys leucurus*
Yellow-billed cuckoo	*Coccyzus americanus*

ACRONYMS AND ABBREVIATIONS

°F	degrees Fahrenheit
ACEC	Area of Critical Environmental Concern
AML	Abandoned Mine Land
AMR	appropriate management response
APD	Application for Permit to Drill
AQD	Air Quality Division
ATV	all-terrain vehicle
AUM	animal unit month
BA	Biological Assessment
BLM	Bureau of Land Management
BTU	British Thermal Unit
CFR	Code of Federal Regulations
cfs	cubic feet per second
DEQ	Department of Environmental Quality
DOT	Department of Transportation
EIS	Environmental Impact Statement
ESA	Endangered Species Act
FOIA	Freedom of Information Act
FLPMA	Federal Land and Policy Management Act
GIS	Geographic Information System
HNO_3	nitric acid
I-80	Interstate 80
INPS	invasive nonnative plant species
KSLA	Known Sodium Leasing Area
MSA	Management Situation Analysis
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NH_4	particulate ammonium
NMFS	National Marine Fisheries Service
NO_2	nitrogen dioxide
NO_3	nitrate
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
O_3	ozone
OHV	off-highway vehicle
P&M	Pittsburg & Midway Coal Company
PFC	proper functioning condition
PM_{10}	particulate matter 10 microns or less
$PM_{2.5}$	particulate matter 2.5 microns or less
RMP	Resource Management Plan
ROD	Record of Decision
ROW	right-of-way
SMA	Special Management Area
SO_2	sulfur dioxide
SO_4	sulfate
SRMA	Special Recreation Management Area
TCP	Traditional Cultural Property
U.S.	United States
USC	United States Code
USEPA	United States Environmental Protection Agency
USFS	United States Forest Service
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
VRM	Visual Resource Management
WAAQS	Wyoming Ambient Air Quality Standards
WGFD	Wyoming Game and Fish Department
WSA	Wilderness Study Area
WYNDD	Wyoming Natural Diversity Database